Table of Contents

THE EVALUATION OF THE EXPANDED EBT DEMONSTRATION IN MARYLAND

Volume 3: System Impacts on Demonstration Participants

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TABLE OF CONTENTS

LIST OF EXHIBITS

Table of Contents

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John Kirlin
Project Director

CHAPTER ONE
INTRODUCTION

This is the third volume of a three-volume final report presenting the results of the evaluation of the expanded EBT demonstration in Maryland. Volume 1 describes the process followed by the system vendor and by federal, state and local officials as they endeavored to design, develop and implement the Maryland EBT system.[1] Volume 2 describes the impacts of the demonstration EBT system on administrative costs, float, and benefit loss and diversion.[2]

A summary of the major findings presented in the three-volume final report is available as a separate document.[3]

1.1 PROJECT OVERVIEW

Over the past ten years, the Food and Nutrition Service (FNS) of the U.S. Department of Agriculture has been investigating an alternative method of issuing and redeeming benefits in the Food Stamp Program. This method, called electronic benefits transfer (EBT), eliminates the use of paper food stamp coupons and implements a computer system, together with a point-of-sale (POS) terminal network and plastic magnetic-stripe EBT cards, to handle benefit issuance and redemption.

The technical feasibility of EBT was demonstrated when the first EBT system became operational in February 1985, serving approximately 3,400 food stamp recipients.[4] An evaluation of that demonstration concluded that recipients, food retailers, and financial institutions preferred the EBT system to the use of food stamp coupons, and that their costs of participating in the Food Stamp Program were lower under EBT. Administrative costs of the

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1. Margaret Hargreaves and Paul Elwood, *The Evaluation of the Expanded EBT Demonstration in Maryland, Volume 1: System Startup, Conversion and Expansion.* Cambridge, MA: Abt Associates Inc., May 1994.

2. Christopher Logan *et al.*, *The Evaluation of the Expanded EBT Demonstration in Maryland, Volume 2: System Impacts on Program Costs and Integrity*. Cambridge, MA: Abt Associates Inc., May 1994.

3. John Kirlin, *The Evaluation of the Expanded EBT Demonstration in Maryland: Summary of Findings*. Cambridge, MA: Abt Associates Inc., May 1994.

4. John A. Kirlin, *Developing an Electronic Benefit Transfer System for the Food Stamp Program.* Cambridge, MA: Abt Associates Inc., August 1985.

EBT system, however, were much higher than those of the coupon issuance system it replaced.[5] Subsequent system changes lowered costs somewhat, but they were still more than triple the paper costs.[6]

In 1988, FNS enlisted state and local governments to conduct additional EBT demonstrations. The new "state-initiated" demonstrations were intended to serve as more realistic models for future EBT initiatives. It was also expected that EBT's administrative costs within the Food Stamp Program would be lower due to cost-sharing with other public assistance programs and with commercial electronic funds transfer networks.[7] Successful demonstrations were implemented in Ramsey County, Minnesota and in New Mexico, where EBT systems combining food stamp and cash assistance benefits became operational in 1992. An evaluation of these systems confirmed that EBT can be cost-competitive with coupon issuance systems, at least in a relatively small-scale demonstration environment.[8]

The Maryland EBT demonstration was initiated, with the encouragement of the U.S. Office of Management and Budget, to test whether EBT could be technically feasible and cost-competitive on a large-scale. In November 1989, a pilot project was implemented by TransFirst Corporation, under contract to the Maryland Department of Human Resources (DHR), in the Park Circle District of Baltimore. The system served six assistance programs: the Food Stamp Program, Aid to Families with Dependent Children (AFDC), Bonus Child Support (BCS), Non-Public Assistance Child Support (NPACS), Public Assistance for Adults (PAA), and the Disability Assistance Loan Program (DALP).[9]

Under the terms of the contract, the pilot project could be expanded statewide after it reached a steady state of operation in Park Circle and after DHR received approval for

5. William L. Hamilton *et al.*, *The Impact of an Electronic Benefit Transfer System in the Food Stamp Program.* Cambridge, MA: Abt Associates Inc., May 1987.

6. John A. Kirlin *et al.*, *The Impacts of the State-Operated Electronic Benefit Transfer System in Reading, Pennsylvania.* Cambridge, MA: Abt Associates Inc., August 1989.

7. Electronic funds transfer is a process by which funds are transferred electronically between bank accounts.

8. John A. Kirlin *et al.*, *The Impacts of the State-Initiated EBT Demonstrations on the Food Stamp Program.* Cambridge, MA: Abt Associates Inc., June 1993.

9. Until December 1992, the Disability Assistance Loan Program was called General Public Assistance.

expansion from FNS and the U.S. Department of Health and Human Services' Family Support Administration (later renamed the Administration for Children and Families, or ACF, and hereafter referred to as ACF). Federal approval would be contingent on the project's cost-effectiveness.

The pilot EBT system was fully implemented in 1990, serving about 5,000 recipients. Preliminary cost analysis findings, issued in October 1990, suggested that although the pilot program was cost-effective overall and had the potential to reduce food stamp issuance costs if implemented statewide, the system would not be cost-effective for AFDC issuance. As a result, a new cost-sharing agreement, the Single Administrative Grant (SAG), was negotiated in August 1991 between DHR, FNS and ACF. This agreement capped federal reimbursements per case to their level under paper issuance, making the project cost-neutral to both federal agencies. Simultaneously, the EBT contract was transferred to Deluxe Data Systems. TransFirst continued as a subcontractor to Deluxe, processing EBT transactions and adding recipients until Deluxe developed its own EBT system. TransFirst's obligations ended with the conversion of the Maryland EBT caseload to the Deluxe EBT system in July 1992. By July 1993 the system was fully implemented statewide, serving nearly 168,000 households.[10]

1.2 Objectives of the Evaluation and This Report

The evaluation of the expanded Maryland EBT demonstration has four major objectives:

(1) To describe the process by which the expanded Maryland EBT system was designed, developed and implemented statewide.

(2) To determine whether it is possible to design and operate a large-scale, multi-program EBT system that costs no more than current benefit issuance systems, yet is secure and acceptable to participants.

(3) To assess the impact of the Maryland EBT system on agency loss within the food stamp and cash assistance programs and on benefit diversion within the Food Stamp Program.

10. Further details on aspects of the Deluxe system design and the process of system conversion and expansion are provided in Volume 1 of the report, Hargreaves and Elwood, *op. cit.*

(4) To assess the impact of the Maryland EBT system on stakeholders (recipients, retailers, and financial institutions), with a focus on the costs these groups incur to participate in the food stamp and cash assistance programs.

This report addresses the fourth objective. Volume 1 of the evaluation's final report addresses the first objective, and Volume 2 addresses the second and third objectives.

The Maryland EBT demonstration is unique because it is the first demonstration to test a ***statewide*** EBT system. Statewide expansion greatly increases the scale of the demonstration, which is important from an operations and research perspective because key aspects of an EBT system (e.g., system performance and client service) might suffer as demonstration resources are spread over a larger, more spread-out caseload. The Maryland demonstration also represents the first time an EBT system has been implemented in rural areas of a state as well as in urbanized areas. One of the goals of the evaluation is to determine whether such expansion affects impacts on stakeholders or administrative costs.

With respect to the evaluation's examination of the impacts of the EBT demonstration on recipients, retailers, and financial institutions, this report addresses one issue that no previous evaluation of an EBT system has dealt with, plus two issues that no other evaluation to date could. First, for the first time, the evaluation addresses the impacts of an EBT system on participants in cash assistance programs such as AFDC. While some previous EBT demonstrations have included cash assistance programs, evaluations of those demonstrations focused solely on impacts within the Food Stamp Program. Second, this report examines whether the Maryland EBT demonstration has had any impact on caseload size within the food stamp and cash assistance programs. That is, did the presence of the EBT system encourage otherwise eligible clients to enroll in, or induce existing clients to leave, any of the participating programs? The small scale of previous demonstrations did not permit meaningful research on this topic. Finally, because some check cashing organizations in Maryland assisted in issuing food stamp benefits to recipients prior to the introduction of EBT, and all check cashing organizations were available to cash public assistance checks, this evaluation examines the impact of the EBT demonstration on these organizations.

1.3 RESEARCH METHODS

The analysis of EBT system impacts on recipients, retailers, and financial institutions is based primarily on a pre/post research design that included two major surveys of each group: one prior to the introduction of EBT and one after EBT had been implemented throughout the state. Pre-implementation surveys gathered information on costs incurred by each group to participate in the paper-based issuance systems, in which recipients received benefits in the form of food stamp coupons and public assistance checks. Post-implementation surveys obtained similar data on participation costs under EBT issuance. The post-implementation surveys also asked participants for their reactions to the new EBT system, especially which issuance system they preferred and why.

Most estimated system impacts are the difference in pre/post measures. A general weakness of a pre/post research design is that factors other than the intervening treatment (here, the EBT system) also can cause pre/post differences in outcome measures. Research designs often can be strengthened by randomly assigning subjects to treatment and control groups, or by using a comparison group and then comparing the pre/post differences in the control or comparison group with the differences in the treatment group. Random assignment, however, was not operationally feasible for the Maryland EBT demonstration. Similarly, selecting a comparison state for data collection was not considered feasible due to the difficulty of finding a fully comparable state and the constraints on evaluation resources. Where possible, however, the evaluation's pre/post design has been strengthened by taking into account non-EBT factors that might have caused pre/post differences. For instance, the pre/post surveys of retailers and financial institutions employed a longitudinal design to control for inter-store and inter-bank variation in wage structures and operating environments. As another example, the frequency of new-hires at retail stores was held constant across periods when estimating system impacts on training costs.

In addition to the surveys, trained observers recorded transaction times of food stamp and other purchases at retailers' checkout counters before and after system implementation to assess possible impacts of the EBT system on stores' checkout productivity—one of the components of retailers' participation costs. After the system had been implemented, observers also recorded the time customers spent at automated teller machines (ATMs) during periods of peak and non-peak EBT usage to determine the system's impacts on ATM use.

Finally, because many different factors can affect food stamp and cash assistance program caseloads, the evaluation employs an econometric analysis of monthly caseloads and benefits within each of three programs (food stamps, AFDC and DALP) before and after EBT implementation to assess whether EBT had a discernible impact on caseload sizes or average monthly benefits. The monthly caseload and benefit data were provided by the Maryland Department of Human Resources.

1.4 Organization of the Report

This report consists of six chapters, including this Introduction. Chapter Two addresses EBT system impacts on program recipients, especially their costs to participate in the food stamp and cash assistance programs. Chapter Three examines system impacts on monthly caseloads and average monthly benefit levels. Chapter Four presents the analysis of system impacts on food retailers within the state. The fifth chapter reports on system impacts on check cashing organizations, and Chapter Six addresses the impacts of the EBT system on financial institutions that participate in the redemption of program benefits under the paper-based and EBT issuance systems.

A "highlights" section in each chapter's introduction summarizes major findings. A number of technical appendices provide additional information on research methods, data collection efforts, and supplementary analyses.

CHAPTER TWO
EBT IMPACTS ON RECIPIENTS

EBT represents a dramatic change in the way that recipients receive food stamp and cash benefits. Prior to EBT, food stamp recipients in Maryland received benefits in the form of paper coupons, which they could redeem for eligible food items at authorized retailers. Cash benefits were issued in the form of paper checks that program recipients or child support participants could cash or deposit.

With EBT, recipients are issued a permanent, plastic EBT card with separate accounts for food stamp and cash benefits. Each month's benefits are electronically credited to the recipient's accounts on his or her issuance day. Recipients use the card much like a debit card. When shopping, the purchase amounts are deducted electronically at the point of sale from whichever account the recipient specifies (but the food stamp account may only be used to purchase eligible items). Cash may be withdrawn from the cash benefit account at certain ATMs and at point-of-sale terminals. Purchases and withdrawals can be made only by using the recipient's secret personal identification number (PIN).

Recipients in previous demonstrations have generally responded positively to EBT. Evaluations have also shown that, at least within the Food Stamp Program, EBT tends to reduce the amount of time and money recipients must spend to participate in the program. The analysis presented here examines these same issues, but the Maryland demonstration allows us to go beyond the previous evaluations in two potentially important respects. First, we include a detailed examination of recipients' cost of participation in cash benefit programs, which has not previously been studied. Second, because Maryland is the first statewide implementation of EBT, we are able to compare the preferences and participation costs of recipients in rural areas to those of recipients in urban areas.

This chapter presents an analysis of the EBT system's impact on food stamp and public assistance recipients and child support participants. In Section 2.1 we discuss the research questions, design, and sample characteristics. Sections 2.2 and 2.3 present our findings on the impacts of EBT on food stamp and cash benefit recipients respectively. Section 2.4 describes urban/rural differences in system preferences and in costs of participation.

2.1 INTRODUCTION

EBT can change recipients' experiences and behavior in ways both direct and subtle. Most obviously, food stamp recipients no longer carry food stamp coupons or receive cash change from purchases.[1] Cash benefit recipients without bank accounts now can withdraw as much or as little cash as they want, as often as they want, instead of having to cash the entire check at once. Eliminating the postal system from routine benefit issuance reduces one area of vulnerability (mail delays, thefts, or errors). However, new potential problems exist with EBT, such as system downtime or delays. Other problems can exist in both systems, such as the possibility of damaged coupons or cards, or error in the amount of benefits that the individual receives.

Indirect effects of EBT may also be hypothesized. EBT may change the spacing or timing of shopping trips; it may alter the way recipients budget their resources; or it may change their perceptions about participating in assistance programs.

Many of these changes are embodied in recipients' costs of program participation—in particular, the time and money recipients spend to obtain and use their benefits. Some important aspects of the recipients' experience with the issuance system are not matters of time and money, however, but of the recipients' own subjective assessment of dimensions such as the level of security, convenience, and personal dignity associated with using program benefits.

To address this wide range of possible effects, this analysis addresses the following research questions:

- Do recipients prefer EBT to the paper issuance systems (food stamp coupons or cash benefit checks)? What reasons do they give for their preference?
- How does EBT affect the time and money costs of program participation?
- Do EBT impacts of participants' preferences vary by geographic area (urban versus rural)?

1. A purchase using food stamp coupons may result in cash change up to 99 cents.

Data Collection

To address these questions, the evaluation used a pre/post research design based on two independent surveys of recipients. The first survey collected information on recipients' experiences under the paper-based issuance systems. The second survey collected analogous information about the EBT system. EBT impacts are considered to be the differences in experiences of the two samples.

The pre-implementation recipient survey was conducted between March and September 1992; the post-implementation survey, one year later, between June and September 1993. The analysis is based on 1,298 completed interviews from the pre-implementation survey and 1,338 from the post-implementation survey. In both surveys we first attempted to interview the respondent by telephone; where this could not be done, respondents were interviewed in person.

The two survey samples were drawn from listings of recipients provided by the Maryland Department of Human Resources (DHR). The universe included participants in the Food Stamp Program and several public assistance programs. The latter include Aid to Families with Dependent Children (AFDC) and three state programs: Disability Loan Assistance Program (DALP),[2] Public Assistance for Adults (PAA), and Emergency Assistance (EA). In addition, participants in the Non-Public Assistance Child Support Enforcement Program (referred to here as NPACS) were included in the universe.

Food stamp and public assistance recipients who had been receiving benefits for the two months prior to sample selection were eligible for the survey. NPACS participants who had received child support checks in any of the 15 months before the survey were also eligible.

The pre-implementation survey, which addressed paper-system experiences, did not survey recipients living in areas that had converted to EBT before the survey took place (Cecil and Montgomery Counties, and the Park Circle district of Baltimore). These areas were included in the post-implementation sample, however, so that that survey represents the full statewide recipient population. The pre/post analysis here compares only the areas covered by both surveys.[3]

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2. Previously called General Public Assistance (GPA).

3. The system preferences and EBT participation costs of the entire statewide sample are summarized in Appendix B. The statewide numbers differ little from those presented in this chapter.

A self-weighting, two-stage cluster sampling strategy was used. The sampling unit was zip code clusters, with clusters stratified by urban/rural location[4] and food stamp coupon issuance system (i.e., mail, authorization to participate (ATP), and over-the-counter (OTC) issuance). In the first stage of sampling, clusters were randomly drawn, with the probability of being drawn proportional to the number of recipients residing within the cluster. In the second stage we drew a random sample of recipients from each cluster chosen in the first stage.

The sample for the post-implementation survey was drawn from the same clusters used in the pre-implementation survey in order to ensure that some important factors, such as average travel times and distances, could be assumed constant across the samples.

Unless specified otherwise, the results presented here are weighted for nonresponse. Sample sizes, however, are presented in actual (unweighted) terms. The data collection and analysis methodology is described in more detail in Appendix A.

Sample Characteristics

In the pre-implementation sample, 86 percent of respondents received food stamps, 61 percent received public assistance, and 8 percent received NPACS. In the post-implementation sample, 90 percent of respondents received food stamps, 59 percent received public assistance, and 5 percent received NPACS. Many respondents received more than one type of assistance, with the most common combination being food stamps and AFDC.

Most public assistance and food stamp recipients in both samples were less than 40 years old and lived in households composed of three people or fewer. There were more elderly persons and somewhat smaller households among food stamp recipients than among public assistance recipients. Most food stamp and public assistance recipients were female, black, unemployed, and had a high school-level education.

NPACS participants differed somewhat from the profile of public assistance and food stamp recipients. The NPACS participants tended to be better educated, were more likely to be employed (typically full-time), and had somewhat larger households. Nearly all of them were female and most were black.

4. Urban/rural location was based on U.S. Census boundaries of urbanized areas.

The demographic characteristics and program participation status of both samples are shown in Appendix A.

Highlights

In previous EBT demonstrations, recipients have responded very favorably to EBT. The Maryland demonstration proves to be no exception. Among recipients who had experienced both the paper and the electronic systems, 83 percent of food stamp recipients and 91 percent of cash benefit recipients said they prefer EBT.

Recipients feel that EBT offers greater convenience and security than food stamp coupons or checks. We also find some evidence that EBT may reduce the stigma associated with receiving food stamp or public assistance benefits.

Recipients' costs of participation tend to be lower with EBT than in the paper systems. In the Food Stamp Program, EBT cuts participation costs by more than half for the recipient population as a whole, a statistically significant difference. For recipients who had previously received coupons by mail, however, participation costs actually increased slightly (though nonsignificantly) with EBT. In the cash programs, participation costs were lower with EBT than checks, but the difference was not statistically significant.

Both the recipients' preferences and their participation costs were quite similar in rural and urban areas. Although previous demonstrations had not applied EBT in rural areas, the Maryland demonstration indicates that EBT can serve rural recipients just as well as those living in urban areas. Concerns that rural recipients would have higher participation costs (perhaps due to longer travel distances, especially to ATMs) were not realized.

It is clear that the participation costs measured in the evaluation do not capture everything about the issuance system that is important to recipients. Cash program recipients expressed stronger preferences for EBT than did food stamp recipients, but it was the food stamp recipients whose participation costs declined more. Food stamp recipients who had previously received coupons by mail, even though they reported no reduction in participation costs, were just as likely to prefer EBT as recipients who formerly received ATPs. Recipients' subjective feelings about security, convenience, stigma, and perhaps other factors, clearly contributed strongly to their overall judgment about the issuance system.

2.2 MEASURING COSTS OF PARTICIPATION

Recipients incur certain costs to participate in any program. These costs include both time and out-of-pocket expenses. An important aspect of this evaluation is the analysis of these costs, insofar as they help to quantify the burden—although they do not fully reflect the benefits—of program participation. Because many of the issues are similar for the Food Stamp Program and cash programs, we discuss them here, and present the ***results*** of the cost analysis in the sections on food stamp impacts and cash-program impacts, respectively. The reader may wish to refer back to this section when reading the presentation of results.

We divide participation costs into three main components:

- The cost to obtain benefits;
- The cost to resolve problems; and
- The cost of lost (unreplaced) benefits.

Cost of Obtaining Benefits

This cost component includes the time and money costs recipients incur to take possession of benefits.

For food stamp recipients, the cost of obtaining coupons is quite sensitive to the type of issuance system. For mail recipients, the process is virtually costless, unless they need to be present to sign for certified mail or to occasionally pick up coupons at the post office or Social Services Office (SSO). ATP recipients typically incur the costs of traveling to the location where they exchange the ATP for coupons. OTC recipients incur costs of traveling to the SSO and waiting to pick up the food stamp coupons.

For cash program recipients and child support clients, taking possession of the benefits involves going to deposit or cash the check, typically at a bank or check cashing store. For those without bank accounts, cashing the check often involves payment of a fee at the check cashing store. Since the check has to be cashed in its entirety, such trips are made only once a month.

In the EBT system, having benefits electronically credited to the EBT account is essentially costless to recipients. However, other costs are incurred, specifically:

- The cost to obtain the initial Independence card;
- The cost to receive training;
- The cost to obtain replacement cards; and
- The cost to withdraw benefits from a money machine.

The first two cost components were amortized over the average length of the program spell.

The last component, the cost to withdraw cash, is unique to cash recipients. It involves going to a cash machine to withdraw cash, typically at an ATM or food store equipped with EBT terminals. Most recipients make several such trips each month, but since only one trip is required to access nearly all of one's monthly benefits,[5] we based this cost on one trip per month.

For participants with both food stamp and cash accounts, shared program costs (e.g., costs to get the card, training, and replacement cards) were allocated half to the Food Stamp Program and half to the cash program. The cost of withdrawing cash was allocated entirely to a recipient's cash program.

Cost of Resolving Problems

This component refers to the cost of making trips and phone calls to the relevant offices to resolve issuance-related problems (for example, reporting incorrect or unreceived allotments). It is the same in the paper and EBT systems. For food stamp and public assistance recipients, the relevant office is the SSO; for NPACS clients, it is the Child Support Enforcement Office and, with EBT, the SSO.

Cost of Lost (Unreplaced) Benefits

A number of problems may result in benefits being lost to the recipient. In some cases, these problems are resolved and the recipient regains the benefits after a delay; in other cases the benefits are not replaced, and the loss is permanent. We consider as "losses" only those

which were ***not*** replaced. The monthly loss is computed as the amount of the most recent loss times the frequency reported per month.

The nature of possible losses differs between the paper and EBT systems. In the paper system, we considered the following types of lost benefits:

- Food stamp ATP lost, stolen, or damaged;
- Food stamp ATP issued for too few benefits;
- Other ATP problem that resulted in too few benefits received;
- Too few coupons received;
- Food stamp coupons lost, stolen, or damaged;
- Grocer overcharges (food stamp recipients only);
- Public assistance check written for too low an amount; and
- Check lost, stolen, or damaged.

In the EBT system, types of benefit losses include:

- Independence card account(s) credited for too few benefits;
- Too little in account(s) for "other" reasons;
- Benefits taken while card was lost or stolen;
- Benefits used without recipient's permission;
- Grocer overcharges (food stamp recipients only);
- Forced withdrawal of cash benefits with card; and
- Direct deposit account credited for too few benefits.

Participation costs were measured in the recipient surveys. A series of questions was asked about events that recipients had encountered over the past two months, the time and money recipients spent as a result of those events, and the value of any benefits that were lost but not replaced. In translating the recipients' responses into cost estimates, we used the following procedures:

- All costs are expressed as the average cost per case month.
- Recipients' time spent in obtaining benefits or resolving problems is valued at the federal minimum wage of $4.25 per hour.
- Where events involve more than one program, such as a recipient of both AFDC and food stamps obtaining the initial EBT card, the costs are divided evenly between the programs.

Computational and analytic issues are discussed in more detail in Appendix A.

2.3 EBT Impacts on Food Stamp Recipients

EBT brings major changes in the way that recipients obtain and use their food stamp benefits. Before EBT, the State of Maryland delivered food stamp benefits in three ways: mail delivery, ATP issuance, and OTC pickup at the SSO. With mail delivery, food stamp coupons were simply mailed to the recipient. In areas with ATP issuance, recipients received an ATP card in the mail, and then exchanged it for food stamp coupons at the SSO or an authorized agent. Finally, in some areas, recipients picked up coupons in person at the SSO. In our pre-implementation sample, 60 percent of respondents received coupons via ATP, 31 percent by mail, and 6 percent by OTC pickup at the SSO. All recipients used coupons to pay for eligible food items much like cash.

In the EBT system, recipients use a magnetic-stripe card in a process modeled on debit card purchases. Instead of storing and carrying a supply of coupons, recipients have benefits that reside in an electronic account. Instead of physically obtaining coupons each month, they obtain a card when they begin participating and obtain a replacement only if it is lost, stolen or damaged.

Recipients may verify that the allotment credit has been made by running a balance-only transaction at a terminal, by calling the automated audio response unit (ARU), or by calling their caseworker.

This section examines the impact of these changes, looking in turn at recipients' overall impressions, the time and money they spend to participate in the Food Stamp Program, their food shopping patterns, and their household food supply.

Preferences for EBT or Coupons

Food stamp recipients who experienced both EBT and the coupon system overwhelmingly preferred EBT. Overall, 83 percent of such recipients said they preferred EBT, while only 10 percent preferred the coupon system (the rest did not express a preference).[6]

It might be expected that recipients' responses to EBT would depend on the nature of the coupon system they had experienced. In particular, because recipients under ATP and OTC systems had to make a monthly trip to pick up their food stamps, these recipients might respond more favorably to EBT, while recipients under mail systems might be less impressed.

As it turns out, recipients' preference for EBT seems largely unrelated to the nature of the coupon system they previously experienced, as shown in Exhibit 2.1. Over 80 percent of all three groups preferred EBT. Recipients who had participated in the mail issuance system expressed about the same margin of preference as those whose previous experience had been with the ATP system. Recipients apparently respond more to characteristics of the food coupons than to the way in which the coupons are issued.

Confirming this general preference, 95 percent of all recipients (including those who had not previously experienced the coupon system) said they were either "very satisfied" or "satisfied" with EBT. Comparing this response pattern to those seen in customer satisfaction studies for commercial services or products, EBT appears to generate a very high level of satisfaction. Finally, nearly 95 percent of recipients said they felt secure with the EBT card.

Some of the reasons why recipients like EBT are visible in other measures reported in Exhibit 2.1. Two thirds think it is easier to shop with EBT than coupons. More than a third feel that they encounter fewer problems requiring a trip to the SSO. And a fifth believe that store employees treat EBT users better than people with food stamp coupons.

The latter finding is consistent with anecdotal evidence indicating that EBT reduces the stigma associated with participating in the Food Stamp Program (though only 3 percent offered "reduced embarrassment or stigma" as an advantage of EBT, as noted below). Food stamp coupons readily identify the user as being dependent on public assistance. The EBT card might be an equally obvious identifier, especially where retailers do not accept other forms of

6. Among those who preferred coupons, the following groups were slightly over-represented: those 60 or more years old (14 percent preferred coupons); men (14 percent); and those reporting a handicap (15 percent).

EXHIBIT 2.1

SYSTEM PREFERENCES OF FOOD STAMP RECIPIENTS

	Percent
Percent of former coupon users who prefer EBT over coupons:	83.1
Former ATP recipients	80.6
Former OTC recipients	93.0
Former mail recipients	82.1
Percent who are satisfied/dissatisfied with the EBT card:	
Very satisfied	76.5
Somewhat satisfied	18.4
Somewhat dissatisfied	3.2
Very dissatisfied	1.3
Percent who feel secure with EBT card	94.7
Percent of former coupon users who:[a]	
Feel shopping is easier with EBT card	66.9
Feel food store employees treat him/her:	
Better than when used coupons	21.0
Same as when used coupons	75.5
Worse than when used coupons	3.3
Make more/same/fewer visits to the Social Services Office to deal with problems	
More	1.9
Same	59.1
Fewer	38.8
Sample size	1,055

Responses weighted for nonresponse. Sample size is actual (unweighted).

[a] This represents 87.6 percent of food stamp respondents.

Source: Post-Implementation Recipient Survey

electronic payment. The EBT card, however, may have a more "upscale" image than coupons, because it resembles the credit or debit cards most often used by middle- and upper-income persons. Whatever the reason, although most recipients did not perceive any different treatment with EBT, a notable minority believed that EBT improves the situation.

Finally, the most common responses to an open-ended question about the advantages of EBT (not shown in the exhibit) concerned convenience. About half of all respondents gave as their first answer either general convenience, convenience in obtaining benefits ("you don't have to pick up benefits"), or convenience in handling or using benefits. The next most common set of responses mentioned security advantages (14 percent), while 3 percent spoke of

reduced embarrassment or stigma. When asked about advantages of coupons, most respondents could not think of any.

Costs of Participation

Food stamp recipients must undertake certain activities in order to obtain and use their food stamp benefits. Sometimes they encounter problems in this process. Sometimes their benefits are lost or stolen. The recipients' cost of participation in the Food Stamp Program is defined as the time and money they spend to carry out these necessary activities and deal with problems, plus the value of any of their benefits that are lost or stolen. These have been described generally in Section 2.2; methodological issues are discussed in more detail in Appendix A.

EBT substantially reduced the costs of participating in the Food Stamp Program for Maryland recipients. The average monthly cost to participate was $8.29 in the paper system, as shown in Exhibit 2.2. The cost fell to less than half that level with EBT, or $3.15, a statistically significant difference.

The average cost of participation is strongly influenced by a small number of recipients who report quite substantial costs in both the coupon and EBT systems. The EBT reduction in ***median*** costs is even greater than the difference in means: from $3.87 in the coupon system to only $0.36 with EBT. In any given month, then, most coupon recipients experience fairly small participation costs and most EBT recipients have even smaller costs. Each month a small number of recipients incur more substantial costs, but this number tends to be smaller with EBT than coupons.

EBT's comparative advantage depends on the system it replaces, because participation costs differ strikingly across the three coupon issuance systems. Mail issuance, which rarely requires positive action from the recipient to obtain benefits, has an average monthly participation cost of $3.20—slightly over the EBT cost. The ATP and OTC systems require a monthly trip by the recipient to pick up coupons, and hence have substantially higher costs.

The general finding that EBT reduces participation costs is consistent with recipients' expressed preferences for EBT. It is clear that participation costs do not fully explain preferences, however. EBT brought no significant reduction in participation costs for recipients in the mail issuance system. Nonetheless, recipients who had formerly gotten their coupons by

Table of Contents

EXHIBIT 2.2

COSTS OF FOOD STAMP PARTICIPATION
(cost per case month)

	Total Cost	Cost to Obtain Benefits	Cost to Resolve Problems	Cost of Lost Benefits	Sample Size
EBT	$3.15	$0.80	$0.34	$2.02	1,055
Paper system	8.29	3.92	1.16	3.21	1,110
ATP issuance	10.59	5.35	0.97	4.26	654
Mail issuance	3.20	0.47	1.47	1.27	355
Over the counter issuance	13.11	7.45	1.68	3.98	76
Difference	-5.14**	-3.12**	-0.82**	-1.19†	

Results weighted for nonresponse. Sample size is actual (unweighted). Difference is EBT cost minus paper cost. *T*-test statistics are in parentheses.

** Statistically significant at the 1 percent level.
* Statistically significant at the 5 percent level.
† Statistically significant at the 10 percent level.

Source: Pre- and Post-Implementation Recipient Survey

mail preferred EBT by about the same margin as those who had been in the ATP issuance system.

This implies that recipients perceive some value in EBT beyond what is captured by the measures of participation cost. The recipients' expressed opinions of EBT provide some clues about where this value may lie: in the convenience of handling and shopping with EBT benefits, in security, and in a reduction of stigma. As the discussion below explores the origin of the changes in participation cost, it is important to bear in mind that other elements of the recipients' experience may have equal or greater salience in their own opinions.

Cost of Obtaining Benefits

Although all three components of food stamp participation costs declined with EBT, the largest reduction occurred in the cost of obtaining benefits. This reduction, from $3.92 to

$0.80, accounts for 60 percent of EBT's overall impact on recipients' participation costs. This effect is statistically significant.

Most of the EBT cost of obtaining benefits stems from recipients' need to replace lost or damaged EBT cards. About 11 percent of the survey respondents reported that they had replaced their EBT card in the past two months. The visit to the SSO and other actions to get the replacement card accounted for over two thirds of the overall cost of obtaining benefits. The remaining costs were incurred as recipients obtained their initial card and were trained in how to use it; these costs are amortized over the average length of time recipients participate in the program, and hence are a small part of the average monthly cost.

In the paper coupon system, mail issuance entails the lowest average cost to obtain benefits—even lower than EBT—at $0.47 per month. Typically, recipients do not incur any time or money costs because the mail delivery is made to the recipient's home. Less commonly, recipients must pick up the stamps at the SSO or post office (if, for example, they have the stamps delivered to a post office box).[7]

The recipients' costs of obtaining benefits in OTC and ATP issuance systems are much higher than in either the EBT or mail systems. The OTC process, which costs an average of $7.45, involves a monthly trip to the SSO to pick up the stamps, and often requires substantial waiting time and out-of-pocket expenses. ATP issuance, with a somewhat lower average monthly participation cost of $5.35, involves a similar process. Most of the cost stems from exchanging the ATP for food stamps (traveling to the exchange location and waiting in line).

Most of the participation cost in all of the issuance systems reflects time spent by recipients rather than out-of-pocket expenses. Recipients devote an average of about 10 minutes per month to obtaining their EBT benefits, and they have out-of-pocket expenses of $0.30 (see Exhibit 2.3). The corresponding averages for the coupon system are 35 minutes and $1.46.

7. For recipients who have food stamps delivered to a post office box, the cost presented includes travel costs to the post office box but not the rental cost of the box.

EXHIBIT 2.3

COSTS TO OBTAIN FOOD STAMP BENEFITS
(cost per case month)

	Total Cost	Money Cost	Time Cost	Time (hrs/case month)	*n*
EBT	$0.80	$0.30	$0.51	0.12	1,055
	(2.12)	(1.58)	(0.86)	(0.20)	
Paper System	3.92	1.46	2.46	0.58	1,085[a]
	(4.61)	(3.14)	(2.59)	(0.61)	
ATP issuance	5.35	1.89	3.46	0.81	654
	(4.63)	(3.57)	(2.46)	(0.58)	
Mail issuance	0.47	0.16	0.31	0.07	355
	(1.72)	(0.69)	(1.28)	(0.30)	
Over-the-counter issuance	7.45	3.90	3.55	0.84	76
	(4.79)	(3.87)	(2.31)	(0.54)	

Standard deviations are in parentheses. Results weighted for nonresponse. Sample size is actual (unweighted).

[a] 25 food stamp coupon recipients did not provide information on issuance system, so costs to obtain benefits were not computed for them. The overall mean cost of obtaining food stamp benefits was imputed to them for purposes of computing their total cost of participation.

Source: Pre- and Post-Implementation Recipient Surveys

Cost of Resolving Problems

Recipients' costs for problem resolution were significantly less with EBT than coupons. The $0.34 average monthly cost in the EBT system (Exhibit 2.2) was less than a third of the coupon average of $1.16, a statistically significant difference.

Problem resolution costs reflect the costs of trips to the SSO and calls to the SSO or EBT Customer Service Center to resolve problems with benefit issuance.[8] Recipients spend time on the phone or at the SSO to resolve problems. They incur both time and money costs to make visits to the SSO, while phone calls incur only a time cost.

Exhibit 2.4 summarizes the major factors which affected problem-resolution costs. Note that these figures reflect trips and calls made for problems involving all types of benefits that a recipient received, not just those dealing with food stamps.

8. The survey question asked recipients to exclude calls and trips to resolve eligibility and other problems.

EXHIBIT 2.4

SUMMARY OF FACTORS INVOLVED IN RESOLVING PROBLEMS—FOOD STAMP RECIPIENTS

	EBT	Coupon
Percent who made trips to the SSO to resolve problems (last two months)	4.90	12.13
Average time spent at SSO to resolve problem, last trip (minutes)	41.85	56.82
Percent who made phone calls to SSO to resolve problems (last two months)	11.80	23.77
Average duration of phone call, last call (minutes)	10.83	10.70

Results are weighted for nonresponse. SSO = Social Services Office

Figures include trips and calls made for any problem-resolution reason (not just food stamp problems).

Source: Pre- and Post-Implementation Recipient Survey

EBT appears to have reduced substantially the frequency with which recipients have to deal with issuance problems. Fewer than 5 percent of EBT card-holders made trips to the SSO, compared with 12 percent of coupon users. Similarly, only about 12 percent of card-holders made phone calls, versus 24 percent of coupon users. The length of the average visit or phone call was not strikingly different between EBT and coupons. Apparently, then, EBT's main effect was to present fewer problems, rather than to reduce the difficulty of resolving a problem once it existed. Exhibit 2.5 summarizes the time and money costs to resolve problems.

Food Stamp Benefits Lost

Like the other elements of participation cost, the cost of lost benefits was smaller with EBT than with coupons by a statistically significant amount. Although this was the smallest of the EBT effects in percentage terms, the average EBT cost of $2.02 was still more than a third lower than the coupon average.

The types of losses that recipients experience (or perceive) differ somewhat between the coupon and EBT systems, and are summarized in Exhibits 2.6 and 2.7. In all systems, the largest single source of losses is the provision of benefits in an incorrectly low amount. We cannot know to what extent these losses reflect recipients' confusion about the amount of benefits to which they were entitled.

Table of Contents

EXHIBIT 2.5

FOOD STAMP RECIPIENTS' COSTS TO RESOLVE PROBLEMS[a]
(cost per case month)

	Total Cost	Money Cost	Time Cost	*n*
EBT				
All food stamp recipients	$0.34 (2.15)	$0.12 (1.39)	$0.22 (1.20)	1,055
Those who had problems	2.98 (5.92)	1.08 (4.24)	1.94 (3.15)	112
Paper system				
All food stamp recipients	1.16 (5.14)	0.26 (1.29)	0.90 (4.40)	1,110
Those who had problems	4.78 (9.67)	1.08 (2.48)	3.70 (8.41)	264
ATP issuance	0.98 (5.27)	0.20 (1.15)	0.78 (4.50)	654
Mail issuance	1.47 (5.22)	0.33 (1.38)	1.13 (4.61)	355
Over-the-counter issuance	1.68 (4.30)	0.56 (1.97)	1.13 (2.90)	76

Standard deviations are in parentheses. Results weighted for nonresponse. Sample size is actual (unweighted).

[a] Cost of trips and phone calls to the Social Services office to resolve issuance problems related to the Food Stamp Program and other nonpublic assistance programs.

Source: Pre- and Post-Implementation Recipient Survey

Apart from these issues, losses for coupon recipients came mainly from retailer overcharges, stolen coupons, and lost coupons, each estimated to average slightly less than $0.50 per month. The main EBT losses stemmed from unauthorized use of the card, either while it was in the recipient's possession or after it had been stolen. In general, EBT recipients were less likely to experience these problems than coupon recipients, but the average loss was greater when such problems occurred.

EXHIBIT 2.6

COST OF LOST FOOD STAMP BENEFITS—PAPER SYSTEM

(cost per case month)

	All Recipients	Recipients Who Lost Benefits[a]	
	Average Dollar Value	Average Dollar Value	*n*
ATP Issuance Problems (n=654)			
ATP had too few benefits	$1.81	$33.82	36
ATP lost or stolen	0.09	34.53	2
ATP damaged	0.00	0.00	0
Received too few coupons in exchange for ATP	0.46	69.60	3
Mail Issuance Problems (n=355)			
Received too few coupons in mail	0.67	26.88	10
Over-the-Counter Issuance Problems (n=76)			
Received too few benefits OTC	2.50	31.71	6
General Food Stamp Problems (n=1110)			
Food stamps stolen	0.48	35.33	14
Food stamps lost	0.44	33.03	12
Food stamps damaged	0.02	7.11	2
Store overcharged	0.49	6.59	74
Total, All Problems	$3.21	$23.66	141

Results weighted for nonresponse. Frequencies are actual reported (unweighted).

[a] Recipients whose benefits were not replaced. Excludes recipients who did not experience the problem, or experienced it but had benefits replaced.

Source: Pre-Implementation Recipient Survey

EXHIBIT 2.7

COST OF LOST FOOD STAMP BENEFITS—EBT SYSTEM
(cost per case month)

	All Recipients	Recipients Who Lost Benefits[a]	
	Average Dollar Value	Average Dollar Value	*n*
Account credited for too low amount	0.78	24.70	32
Less in account than expected[b]	0.40	32.67	12
Grocer overcharge	0.05	5.75	9
FS benefits taken while card stolen	0.29	39.88	9
FS benefits taken while card lost	0.07	13.89	6
FS benefits used without authorization	0.44	32.41	16
Total, all problems	$2.02	$32.29	66

Results are weighted for nonresponse. Sample size is actual (unweighted).

[a] Recipients whose benefits were not replaced. Excludes recipients who did not experience the problem, or experienced it but had benefits replaced.

[b] For reasons other than delay or account credited for too low an amount.

Source: Post-Implementation Recipient Survey

Shopping with Food Stamp Benefits

In addition to changing the mechanics of benefit issuance, it was hypothesized that EBT might alter recipients' shopping behavior, perhaps in rather subtle ways. For example, if stores differ in the ways they handle purchases, recipients might find it more convenient or pleasant to shop in different stores than they previously used.

For the most part, recipients' survey responses reveal little impact of EBT on shopping behaviors. They appear to use the same types of stores with coupons and EBT and to shop in

about the same number of stores. EBT recipients reported a slightly higher average number of purchases per month (4.5, compared to 3.8 with coupons).[9]

A small percentage of recipients allow someone else in the household to shop with food stamp benefits. This is reported slightly more often by EBT than coupon recipients (14.7 vs. 11.2 percent), a somewhat surprising result. One might have expected fewer "alternate shoppers" with EBT, because the alternate shopper would have to learn how to use the card and the PIN, and this knowledge gives the alternate access to all of the recipient's benefits. With food stamp coupons, less instruction is necessary and the recipient can limit the amount of benefits to which the alternate shopper has access. Nonetheless, it does not appear that EBT curtailed the use of alternate shoppers, although survey responses suggest that the alternate shoppers with EBT are somewhat more likely to be adults.[10]

There is some evidence that EBT improves the quality of the shopping experience, as suggested by the general recipient preferences reported earlier. Comparing the responses of coupon and EBT recipients shows that relatively more EBT shoppers feel secure with their benefits and better treated in the stores.

Because the EBT system was implemented only within Maryland, recipients generally cannot use their food stamp benefits outside the state.[11] This obviously poses some inconvenience relative to coupons, which can be used at most food retail stores nationwide. The inconvenience appears to affect relatively few people, however. While 8.8 percent of the coupon recipients said they had used their coupons outside the state, only about a quarter of these respondents, or 2 percent of all recipients, did so on a monthly basis. Most of the other respondents who had used coupons outside the state did so when visiting friends or relatives.

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9. The reported frequency of EBT purchases per month (4.5) is considerably lower than that suggested by system data (over 10 purchases per month). It is likely that recipients forget some of the purchases they make. The comparison to coupon purchases is still valid, however, because both responses are subject to similar recall bias.

10. Differences in question wording preclude a precise measure of this change.

11. About 16 stores in the District of Columbia and neighboring states, however, were equipped with EBT terminals to serve those recipients living near the Maryland border.

Household Food Security and Food Expenditures

Because the Food Stamp Program's fundamental mission is to improve the purchasing power of low-income people in order to allow them to obtain nutritionally adequate diets, any major innovation must be examined to see whether it aids recipients in improving their household food security. Large impacts on spending behavior are not expected to occur in a switch to EBT because, unlike cash or checks in some systems that have been tried in

Table of Contents

EXHIBIT 2.8

HOUSEHOLD FOOD SECURITY OF FOOD STAMP RECIPIENTS

	Coupons	EBT
Self evaluation of household's food supply last month (percent):*		
Enough of the kinds of food we want to eat	43.7	54.5
Enough but not always the kinds of food we want to eat	34.2	34.2
Sometimes not enough to eat	18.7	8.6
Often not enough to eat	3.4	2.7
Share of food stamps left one week after receipt (percent of respondents)		
None	29.0	27.4
Less than half	34.0	36.1
About half	24.5	23.1
More than half	12.4	13.4
Percent of households lacking food, food stamp benefits, or money to buy food last month	20.7	14.3*
Average number of days	5.4	6.1
Percent of households in which someone skipped meals last month because of a lack of food, food stamp benefits, or money to buy food	9.2	7.9
Average number of days	4.6	6.3†
Percent of households which did the following last month because there wasn't enough food (multiple answers allowed):		
Borrowed or received food from friends or relatives	16.8	14.0
Took money out of savings to buy food	3.8	4.2
Borrowed money to buy food, or bought food on credit	13.0	9.2†
Worked extra hours or jobs	3.2	3.2
Bought or served less expensive or smaller meals	28.8	22.8†
Got food or meals at a soup kitchen or food bank	7.8	6.1
Applied for other government assistance	3.2	1.3†
Other	0.3	0.9

Results weighted for nonresponse. Source: Pre- and Post-Implementation Recipient Survey.

** EBT result statistically significant from coupon result at the 1 percent level.
* EBT result statistically significant from coupon result at the 5 percent level.
† EBT result statistically significant from coupon result at the 10 percent level.

Table of Contents

Recipients also appear to be spending less of their cash income on food with EBT than with coupons.[13] Regression-adjusted monthly food expenditures averaged $134 per adult male equivalent under the paper system, as compared to $121 under the EBT system.[14] However, as is evident in the regression results presented in Appendix C, the statistically significant EBT impact relates strictly to the pattern of household spending out of reported cash income. Specifically, EBT reduces recipient households' marginal propensity to make food purchases from their cash income resources. (Under the coupon system, recipients spent six cents of every incremental dollar of cash income on food; for EBT, the marginal spending increase is only two cents per dollar.) This pattern might be explained by more effective shopping under EBT or by a reduced need to supplement food stamp benefits with purchases from cash income when trafficking or cash change diversions are reduced.

While the observed food spending reduction is difficult to fully explain, it does not fully offset the positive EBT impact indicated from the attitudinal questions. Thus, in summary, the overall evidence suggests a favorable impact of EBT on recipient household food security.

2.4 EBT Impacts on Recipients of Cash Benefits

The Maryland EBT demonstration includes recipients of four public assistance programs: AFDC, DALP, PAA, and EA.[15] It also include participants in the Child Support Enforcement program who were not participating in any public assistance program; we refer to these as NPACS participants.

Before EBT, all of these programs paid participants by check. Each month checks were printed and mailed to the recipient, who then either deposited the check in a bank account or cashed it. Most public assistance checks were issued once a month. AFDC recipients could

13. Food expenditures are defined as the sum of reported expenditures for food items in the last month at supermarkets, grocery stores, convenience stores, specialty stores (such as bakeries, delis, farmers' markets), and expenditures on takeout items.

14. As explained in Chapter One, the pre/post research design has the limitation of not being able to control for all factors that might affect an outcome variable between the pre- and post-implementation periods. Regression techniques were therefore used to adjust the pre- and post-implementation means for known factors that influence food spending and that might change for survey samples in the two periods.

15. Emergency Assistance benefits were still being issued by check when our post-implementation survey was conducted; therefore no EBT costs are presented for Emergency Assistance.

also receive a separate Bonus Child Support check of up to $50 monthly if the noncustodial parent made a payment to the Child Support Enforcement Office. NPACS participants received checks only when the noncustodial parents made support payments, which they made to the Child Support Enforcement Office in Baltimore.

Nearly all public assistance recipients, and two-thirds of NPACS participants, cashed their check (rather than depositing it in a bank), most frequently at banks or check cashing stores. About half of those who cashed their checks were subject to check cashing fees. Highlights of obtaining benefits by paper check, and problems encountered, are discussed in Appendix C.

In the EBT system, the cash payment is credited electronically to the client's EBT account. The client must go to a cash access location to withdraw the cash using his or her EBT card and PIN. Clients can withdraw cash at ATMs participating in the MOST network, at food stores (with clerk assistance) and, in a limited number of areas, at banks with teller assistance.

Based on survey data, approximately three-quarters of clients "most often" withdraw cash at ATMs; most of the others use POS terminals at food stores. Public assistance recipients report an average of 2.4 cash withdrawals per month with the EBT card, while NPACS participants report an average of 2.8 withdrawals per month. Exhibit 2.9 presents data from September 1993 system reports showing how cash assistance recipients and child support participants split their use of POS terminals and ATMs as access points.[16]

EXHIBIT 2.9

RELATIVE USE OF POS TERMINALS AND ATMS

	POS Terminal[a]	ATM
Number of approved withdrawals	232,585	285,525
Average withdrawal value	$33.08	$85.73
Total transaction volume (millions)	$7.6	$22.3

[a] Transactions at POS terminals can be withdrawals or purchaes. The system does not track these two types of transactions separately.

16. The data are not disaggregated by program.

Table of Contents

Highlights of EBT cash access, and problems encountered, are summarized in Appendix C.

EXHIBIT 2.10

SYSTEM PREFERENCES OF CASH RECIPIENTS

	Public Assistance	NPA Child Support
Percent of former check recipients who prefer the EBT card over checks:[a]	91.1	91.2
Percent who are satisfied/dissatisfied with the EBT card:		
Very satisfied	79.9	65.8
Somewhat satisfied	17.2	34.2
Somewhat dissatisfied	1.6	0.0
Very dissatisfied	1.2	0.0
Percent of former check recipients who:[a]		
Feel secure with the EBT card	93.9	89.2
Feel their money is safer with the EBT card than with checks	89.2	94.2
Feel EBT card is more convenient	91.7	96.6
Feel budgeting is easier with the EBT card	70.4	54.5
Sample size (EBT card users)	643	35

Responses are weighted for nonresponse. Sample sizes are actual (unweighted).

[a] This represents 84 percent of public assistance recipients and 79 percent of NPACS participants.

Source: Post-Implementation Recipient Survey

System Preferences

Like food stamp recipients, an overwhelming majority of recipients in the cash programs prefer EBT to the paper check system. In fact, the EBT preference level of 91 percent shown in Exhibit 2.10 is somewhat higher than the level among food stamp recipients. Similarly, the overall satisfaction level is extremely high: over 97 percent are either "satisfied" or "very satisfied," slightly higher than the rate of satisfaction among food stamp recipients.

The expressed preferences of public assistance and NPACS participants are essentially the same, indicating similar levels of satisfaction.[17]

Convenience and security appear to be the top two reasons for preferring EBT. Over 90 percent of the recipients who have experienced both checks and EBT find EBT more convenient, and nearly as many believe that their money is safer with EBT. Most recipients also find that EBT makes budgeting easier.

Costs of Participation in Cash Programs

Recipients' costs of participation in cash programs, as in the Food Stamp Program, are measured in terms of three components: the cost of obtaining benefits, the cost of resolving problems, and the value of (unreplaced) lost benefits. Again, costs include both time and out-of-pocket expenses. The main difference from the food stamp situation is that the events involved in obtaining and using benefits differ somewhat.

Recipients' costs of participation in the cash programs were somewhat lower with EBT than checks. For the public assistance programs, the overall cost with checks averaged $8.87 per case month, as shown in Exhibit 2.11. The cost declined to $6.81 with EBT, an estimated reduction of about 23 percent that is statistically significant at the 10 percent level.

The pattern for public assistance programs largely reflects the experience of AFDC recipients, who make up the bulk of the population. The state programs (DALP, PAA, and EA) saw a larger and statistically significant reduction in participation costs. The reduction for NPACS participants was considerably smaller and not statistically significant.

The difference in average participation costs appears to understate the difference in most participants' experiences in a given month. For example, the median cost for public assistance recipients was $6.01 with checks, compared to $2.67 with EBT. As we observed with food stamps, then, a minority of cases incurs quite substantial costs in any given month, and averaging in these cases tends to dampen the distinction between the EBT and paper systems.

17. For much of the analysis presented here, we combine AFDC, DALP, PAA, and EA into the general category of "public assistance." NPACS participants are presented separately because of differences in both the programs and the participants: the source of the payment is the noncustodial parent rather than the government; the payment is not necessarily made every month; and the participants tend to be in somewhat better economic circumstances than the public assistance program recipients.

Table of Contents

EXHIBIT 2.11

COSTS OF CASH-PROGRAM PARTICIPATION, BY PROGRAM

(cost per case month)

	Total Cost	Cost to Obtain Benefits	Cost to Resolve Problems	Cost of Lost Benefits	Sample Size
Public Assistance Programs					
Paper system	$8.87	$7.52	$0.75	$0.60	776
EBT	6.81	3.72	0.17	2.93	682
Difference	-2.06†	−3.80**	-0.58**	2.33*	
AFDC					
Paper system	9.10	8.03	0.83	0.25	625
EBT	7.30	3.82	0.16	3.32	600
Difference	-1.80	-4.21**	-0.67**	3.07*	
State-Operated Programs					
Paper system	7.94	5.47	0.45	2.02	151
EBT	3.44	3.04	0.18	0.22	82
Difference	-4.50**	-2.43**	-0.27	-1.80	
NPA Child Support					
Paper system	9.86[a]	6.87	1.31	1.69	94
EBT	8.97	2.11	2.02	4.83	54
Difference	-0.89	-4.76**	0.72	3.14	

Results weighted for nonresponse. Sample sizes are actual (unweighted). Difference is EBT cost minus paper cost.

[a] This cost is very sensitive to the costs of one direct deposit respondent who reported numerous trips and phone calls to the Child Support Enforcement Office, and a large error in crediting her account. Her resonses are internally consistent. With this observation deleted, average NPACS participation costs under EBT drop to $3.91 per case month ($2.14 to obtain benefits, $0.62 to resolve problems, and $1.16 in lost benefits).

** Statistically significant at the 1 percent level.
* Statistically significant at the 5 percent level.
† Statistically significant at the 10 percent level.

Source: Pre- and Post-Implementation Recipient Survey

It is interesting to note that, although EBT's reductions in participation cost were somewhat smaller in the cash programs than in the Food Stamp Program, the cash program recipients express even stronger preferences for EBT. This reinforces the point that our measures of participation costs do not capture all aspects of the issuance system that are important to recipients.

Cost of Obtaining Cash Benefits

The process of obtaining benefits—mainly cashing the check or going to the ATM—accounts for the bulk of participation costs in both the check and EBT systems. EBT substantially reduces this cost.

For public assistance recipients, the cost of obtaining benefits drops from $7.52 with checks to $3.72 with EBT, a 51 percent reduction that is statistically significant. The reductions for each type of public assistance program and for NPACS are similarly substantial and statistically significant.

One of the important effects of EBT is to eliminate check cashing fees. Nearly half of all public assistance recipients and 40 percent of NPACS participants reported that they paid fees to cash their most recent check.[18] Some fees were charged as a percentage of the face value of the check (about 2 percent, on average), and some were a flat fee (averaging $3.50 for public assistance recipients). No fees were permitted for EBT cash withdrawals.[19]

This effect is visible in the comparison of time and money expenditures in Exhibit 2.12. Out-of-pocket expenditures represent the majority of costs under the check systems, while time costs dominate under EBT.

EBT costs in the analyses above are based on the assumption that recipients make ***only one cash withdrawal trip*** each month. This is the minimum that is required in order for recipients to access their benefits.[20] In fact, however, recipients were allowed to make as many EBT withdrawals as they wished free of charge. Most recipients did make more than a single withdrawal: public assistance recipients reported an average of 2.4 trips per month to withdraw cash, while the average for NPACS participants was 2.8 withdrawals.

Because these additional withdrawals were voluntary, one must presume that the recipients derived extra value from them that offset or exceeded the additional cost they

18. Banks in Maryland are not permitted to charge fees for cashing such checks. However, more than half of the recipients cash their checks at check cashing stores, grocery stores, or other locations that may charge fees.

19. A few recipients nonetheless reported paying fees to make cash withdrawals in POS transactions.

20. If EBT recipients used an ATM with a maximum withdrawal amount, they could perform additional transactions to withdraw all remaining benefits (except amounts below $5 or $10, depending on the minimum denomination bill dispensed by the machine).

EXHIBIT 2.12

COSTS TO OBTAIN CASH BENEFITS

Cost Per Case Month	Total Cost	Money Cost	Time Cost	Time (hrs/ Case Month)	*n*
Public Assistance Programs					
Paper system	$7.52 (6.84)	$4.52 (5.85)	$3.00 (2.68)	0.71 (0.63)	766
EBT	3.72 (3.96)	1.16 (3.01)	2.56 (1.89)	0.60 (0.45)	682
AFDC[a]					
Paper system	8.03 (7.33)	4.93 (6.30)	3.10 (2.83)	0.73 (0.67)	625
EBT	3.82 (4.08)	1.22 (3.12)	2.59 (1.91)	0.61 (0.45)	600
State-operated programs					
Paper system	5.47 (3.56)	2.86 (2.80)	2.61 (1.88)	0.61 (0.44)	151
EBT	3.04 (2.85)	0.67 (1.98)	2.36 (1.74)	0.56 (0.41)	82
NPA Child Support					
Paper system	6.87 (8.96)	2.20 (3.87)	4.67 (7.04)	1.16 (1.85)	94
EBT	2.11 (2.59)	0.49 (1.35)	1.62 (1.70)	0.38 (0.40)	54

Standard deviations are in parentheses. Results are weighted for nonresponse. Sample size is actual (unweighted).

[a] Includes Bonus Child Support.

Source: Pre- and Post-Implementation Recipient Survey

incurred. We have no measure of that extra value, and therefore omit the additional transactions entirely from the measure of participation costs.

It is nonetheless important to recognize that the extra transactions are a potentially important element of the recipients' EBT experience. Recipient preferences, for example, are not based on their experience in a one-withdrawal program, but on the ability to make multiple withdrawals. Exhibit 2.13 therefore shows key participation costs when all transactions are included (but still omitting any measure of the benefit derived from the additional transactions).

Table of Contents

EXHIBIT 2.13

DIFFERENCES IN CASH EBT COSTS BASED ON NUMBER OF CASH WITHDRAWAL TRIPS
(cost per case month)

	Public Assistance	NPA Child Support
Cost to withdraw cash[a]		
One trip	$3.31	$2.43
Reported number of trips	8.01	7.15
Cost to obtain benefits		
One trip	3.72	2.11
Reported number of trips	8.10	5.20
Total participation cost[b]		
One trip	6.81	8.97
Reported number of trips	11.19	12.06
Average reported trips per month	2.4	2.8

Costs are weighted for non-response.

[a] "Cost to withdraw cash" is over card users only. Other costs include direct deposit recipients as well.
[b] "Cost to withdraw cash" is one component of "cost to obtain benefits," which itself is one component of "total participation costs."

Source: Post-implementation recipient survey.

With all withdrawals included, participation costs are estimated to ***increase*** with EBT for both public assistance and NPACS participants. This obviously does not mean that recipients were worse off with unlimited transactions than if they had been limited to a single withdrawal; rather, it reemphasizes the point that the cost of participation measure does not include the benefits derived from being able to access benefits piecemeal over the month, and suggests that such benefits may be considerably greater than the participation cost that is measured.

Cost of Resolving Problems

The cost of resolving problems in cash programs was not large with checks, and it declined further with EBT. Cash program recipients tended to report both fewer and briefer problem-solving visits and telephone calls than food stamp recipients.

The average cost to resolve problems for public assistance recipients amounted to $0.75 per month with checks. The EBT cost of $0.17 was less than one fourth of that amount, a

statistically significant difference. This result principally reflects the pattern for AFDC recipients. Recipients in the state assistance programs reported a smaller reduction that was not statistically significant, and NPACS participants indicated a nonsignificant ***increase*** in costs (see Exhibit 2.14).

Cost of Lost Benefits

Cash program recipients rarely lose benefits that are not replaced, but the losses that do occur are sometimes sizable. Losses in the paper system resulted mainly from lost or stolen checks, as shown in Exhibit 2.15. Most reports of EBT losses concerned incorrect credits to the EBT account or incorrect balances; as we noted with food stamp benefits, many of these incidents may have been matters of recipient misunderstanding rather than system errors.

The average value of reported losses for AFDC recipients was significantly greater with EBT than with checks. A nonsignificant reduction in losses is estimated for the state programs, and a nonsignificant increase for NPACS.

It seems likely that the measure of losses used here is somewhat biased in the direction of finding greater losses for the EBT system. As noted above, it takes at face value the recipients' reports of losses from incorrect credits and incorrect balances, and omits any losses that check recipients may incur as a result of the fact that they have to cash their whole check at once.[21] The true impact of EBT is therefore probably less negative than indicated by our measures, but we cannot determine whether the true impact is likely to be an actual reduction in losses or merely a smaller increase than that shown.

2.5 URBAN/RURAL COMPARISON

All previous EBT demonstrations have taken place in largely urban locations. The Maryland demonstration offers the first opportunity to examine whether rural recipients' experiences with EBT differ systematically from those of their urban counterparts.[22] Several

21. Because food stamp benefits are obtained as coupons in the paper system, we are able to measure loss or theft of coupons after they have been obtained. In the cash programs, once the check is cashed the benefits are indistinguishable from other money in the recipients' possession. Thus, it was not possible to measure this component of losses in the cash programs.

22. A recipient's urban/rural status is based on the U.S. Census boundaries of urbanized areas.

EXHIBIT 2.14

COSTS TO RESOLVE CASH-BENEFIT PROBLEMS

(cost per case month)

	Total Cost	Money Cost	Time Cost	*n*
Public Assistance Programs[a]				
Paper system	$0.75	$0.18	$0.58	776
	(3.36)	(1.11)	(2.59)	
EBT	0.17	0.04	0.12	680
	(0.79)	(0.34)	(0.60)	
Those who had problems				
Paper system	3.17	0.75	2.43	184
	(6.32)	(2.18)	(4.87)	
EBT	1.48	0.38	1.10	71
	(1.99)	(1.01)	(1.53)	
AFDC[b]				
Paper system	0.83	0.20	0.63	625
	(3.60)	(1.20)	(2.76)	
EBT	0.16	0.03	0.13	598
	(0.79)	(0.26)	(0.64)	
State-operated programs				
Paper system	0.45	0.09	0.36	151
	(2.05)	(0.57)	(1.64)	
EBT	0.18	0.12	0.06	82
	(0.86)	(0.71)	(0.20)	
NPA Child Support[c]				
Paper system	1.31	0.02	1.28	94
	(4.11)	(0.16)	(4.08)	
EBT	2.02	0.47	1.55	54
	(12.10)	(3.66)	(8.50)	
Those who had problems				
Paper system	3.97	0.06	3.90	31
	(6.51)	(0.28)	(6.46)	
EBT	4.58	1.07	3.51	24
	(17.80)	(5.50)	(12.59)	

Standard deviations are in parentheses. Results are weighted for nonresponse. Sample size is actual (unweighted).

a Cost of trips and phone calls to the Social Services Office to resolve problems related to public assistance and other (non-Food Stamp Program) programs.

b Includes Bonus Child Support.

c Cost of trips and phone calls to the Child Support Enforcement Office.

Source: Pre- and Post-Implementation Recipient Survey

Table of Contents

EXHIBIT 2.15

COST OF LOST CASH BENEFITS
(cost per case month)

	All Recipients		Recipients Who Lost Benefits			
			PA		NPA	
	PA	NPA	Average Dollar Value	*n*	Average Dollar Value	*n*
Paper Check System						
Check for too low amount	0.20	NA	25.27	6	NA	0
Check lost or stolen	0.40	1.69	90.34	3	68.67	3
Check damaged	0.00	0.00	0.00	0	0.00	0
Total, all problems	$0.60	$1.69	$48.61	9	$68.67	3
EBT System						
Account credited for too low amount[a]	1.32	0.46	45.29	21	4.72	2
Less in account than expected[a,b]	0.51	0.00	28.55	13	NA	0
Forced cash withdrawal[a]	0.18	0.00	125.00	1	NA	0
Cash benefits taken while card stolen[c]	0.54	0.05	74.01	5	0.61	4
Cash benefits taken while card lost[c]	0.46	0.03	72.90	4	0.42	4
Cash benefits taken without authorization[a]	0.05	0.00	20.45	2	NA	0
Direct deposit account credited for less[d]	0.26	27.02	5.00	1	145.00	2
Total, all problems[c]	2.93	4.83	56.86	38	29.24	8

Results are weighted for nonresponse. Sample sizes are actual (unweighted).

[a] Average just over card users, excludes direct deposit users.
[b] For reasons other than delay or account credited for too low an amount.
[c] Average over all recipients (card users and direct deposit users).
[d] Average over direct deposit users.

Source: Pre- and Post-Implementation Recipient Survey

differences could be hypothesized: access to cash machines might be more limited in rural areas, or trips to resolve EBT problems might pose a greater burden. On the other hand, the lower population density and potentially lower prices for some services (such as babysitting) in rural areas might work to reduce costs of participation there.

In fact, urban and rural recipients expressed very similar opinions of EBT, with the rural recipients being fractionally more favorable (86 percent favoring EBT versus 82 percent). In their overall preferences and in their responses to specific issues such as convenience and security, rural recipients consistently gave more positive responses by a few percentage points. This pattern holds true for both food stamp and public assistance recipients.[23]

Location does not appear to have a major impact on recipients' participation costs, as shown in Exhibit 2.16. Most of the urban/rural differences in the exhibit are not statistically different from zero. The only exception is for food stamp recipients. Under the paper coupon system, urban recipients experienced slightly higher participation costs than rural food stamp recipients, largely due to a higher cost of lost benefits. With EBT, there was no statistically significant difference in participation costs between urban and rural areas.

The most important point to be drawn from this analysis is that the Maryland demonstration provides no reason to believe that EBT cannot serve rural residents as well as those in urban areas. Urban and rural residents expressed similar opinions about EBT, and their EBT participation costs were generally the same.

23. NPACS participants are excluded from this analysis because the sample included only a handful of rural participants.

Table of Contents

EXHIBIT 2.16

URBAN-RURAL DIFFERENCES IN COSTS OF PARTICIPATION

(cost per case month)

	Paper System			EBT		
	Urban	Rural	Difference	Urban	Rural	Difference
Food Stamp Program	$8.77	$6.89	$1.88†	$3.16	$3.13	$0.03
Cost to obtain benefits	3.98	3.75	0.23	0.85	0.64	0.21†
Cost to resolve problems	1.24	0.92	0.32	0.36	0.29	0.07
Cost of lost benefits	3.54	2.21	1.33	1.96	2.19	-0.23
Sample size	817	293	1,110	770	286	1,056
Public Assistance	$8.71	$9.39	-$0.68	$7.15	$5.51	$1.64
Cost to obtain benefits	7.39	7.91	-0.52	3.81	3.37	0.44
Cost to resolve problems	0.83	0.53	0.30	0.15	0.22	-0.07
Cost of lost benefits	0.49	0.94	-0.46	3.19	1.93	1.26
Sample size	587	189	776	524	158	682

Results are weighted for nonresponse. Sample sizes are actual (unweighted). Difference is urban cost minus rural cost. EBT costs exclude Cecil and Montgomery Counties and Park Circle district of Baltimore (areas not sampled in pre-implementation survey).

Results for NPA Child Support are not shown because rural sample sizes are too small to permit a meaningful comparison (1 paper check and 13 EBT respondents).

** Statistically significant at the 1 percent level.
* Statistically significant at the 5 percent level.
† Statistically significant at the 10 percent level.

CHAPTER THREE

EBT IMPACTS ON PROGRAM PARTICIPATION AND BENEFIT PAYMENTS

This chapter describes our analysis of the effects of Maryland's EBT system on participation and average benefit payments for three programs: the Food Stamp Program, Aid to Families with Dependent Children (AFDC), and the Disability Assistance and Loan Program (DALP). If EBT affects caseloads or benefits in a systematic way, this has implications for the overall benefits and costs of switching to an EBT system. It is also of concern whether certain recipients (e.g., the elderly or handicapped) may be adversely affected by an EBT system.

Section 3.1 provides an overview of the analysis and summarizes the key results. Subsequent sections discuss the research questions addressed, describe the qualitative evidence on participation impacts, explain the design of the econometric analysis of participation effects, and summarize the results of the econometric analysis.

3.1 INTRODUCTION

The primary question addressed in this chapter is whether the EBT system in Maryland has affected caseloads for the Food Stamp Program, AFDC, or DALP.[1] EBT will affect caseloads only if it changes the rate of entry or exit for these programs. Furthermore, it is possible that EBT could have different impacts on entries and exits. Consequently, this analysis examines not only total caseload but also new approvals and case closures. A secondary question is whether EBT has changed the composition of the caseload, resulting in changes in the average benefit paid to recipients. Even if the Maryland EBT system did not change the total number of cases, it is possible that it affected total benefits paid if, for example, low-

1. The Maryland Department of Human Resources also converted to EBT some participants in the NPA Child Support program, on a voluntary basis. So far only about 25 percent of these clients have elected to switch to EBT. The fact that EBT is voluntary in this program makes effects on participation less likely. EBT should have no effect on closures, because anyone who dislikes EBT can stay in the program without converting. Furthermore, EBT should not deter prospective applicants because they are not required to use EBT. Since we deemed participation impacts unlikely to occur, we focused our analysis on programs where participation in EBT was mandatory.

benefit recipients tend to exit and high-benefit clients tend to enter because of EBT. To address this second issue, we examine average benefit payments for each program.

There are competing hypotheses about how EBT might affect caseloads. If recipients feel that EBT is a less stigmatizing method of benefit receipt, caseloads may increase, through either an increase in new approvals or a decrease in exits. On the other hand, electronic benefit delivery is very different from the old method of delivery; there are training requirements and other learning costs that may make the switch not worth the effort for some clients. Ultimately, such clients would exit their program, leading to reduced caseloads. Finally, it is possible that EBT will not have any major impact on how recipients feel about the welfare system because it is only an administrative change, and does not affect benefits or requirements. Under this last hypothesis there would be no significant impact on participation.

To test these hypotheses we compare participation in each of the three programs before and after EBT, using data for all 23 Maryland counties and 15 Baltimore city districts over the period January 1989 through November 1993. The dates of EBT implementation in these jurisdictions range from September 1991 to April 1993. A simple comparison of caseloads before and after EBT is not adequate, however, because other factors affect participation. In particular, there has been a steady rise in the number of food stamp and AFDC cases over a period that began well before EBT was implemented in any Maryland jurisdiction. The portion of this increase that is independent of EBT (which may be the entire increase) must be factored out so that it is not incorrectly attributed to EBT. We use a statistical approach to control for other influences on participation, estimating separate regression models of approvals, closures, caseload, and average payments for each program. This analysis is supplemented with qualitative evidence, chiefly surveys of recipients on whether EBT has influenced their participation decisions.

These analyses find no serious evidence that the Maryland EBT system has affected participation in any way. For four of the six approvals and closures models (for the Food Stamp Program, AFDC, and DALP), the estimated EBT effect is not statistically different from zero. Although two of the three caseload models do show positive and statistically significant EBT impacts, the magnitude of the impacts is not consistent with the estimated impacts on approval

Table of Contents

and closures. Thus, there are no indications of a consistent, non-zero participation impact due to EBT. This conclusion is supported by the qualitative evidence as well.

3.2 RESEARCH QUESTIONS

This analysis addresses four main research questions for the Food Stamp, AFDC, and DALP programs:

(1) Did the EBT system change the number of eligible households successfully applying for program benefits?

(2) Did the EBT system change the number of participants exiting from the program?

(3) Did EBT affect the size of the total caseload for each program?

(4) Did EBT change the size of the average benefit paid to participating households?

For each question, we are interested not only in whether there was an EBT effect, but also in the magnitude of that impact.

Two approaches are used to answer these questions. The principal method is to estimate econometric models of new approvals, case closures, average benefits, and total caseload for each program. The other approach is more qualitative, and involves analyzing surveys of three groups of clients: (1) ongoing participants in each program; (2) clients with dormant EBT accounts;[2] and (3) clients exiting the Food Stamp or AFDC programs shortly after EBT implementation. Also on a more qualitative level, we examine graphs of caseloads for evidence of an EBT effect. The qualitative information is useful as a way to verify the econometric estimates and, in the case of surveys, to identify the reasons why EBT might or might not influence participation.

The first three questions above attempt to determine EBT's impact on caseload. From a budgetary standpoint, the primary concern is whether converting to EBT will affect program resources. Perhaps the most obvious way this could happen is if EBT affected caseload; any change in caseload will have a direct impact on program outlays (except in the unlikely event of a fully offsetting effect on average benefits per case).

2. An EBT account is "dormant" if the client has not accessed benefits within the account for 30 or more days.

Although our real concern is with impacts on caseload, the econometric analysis also examines entries and exits because they may provide insight into the mechanisms behind any caseload changes. Further, caseload is determined by household decisions about entry and exit, so it is logical to model the separate household decisions rather than their net impact. Although it is reasonable to expect that the same factors will influence entry and exit decisions, it is possible they could have differing impacts. For example, it may be that potential applicants have very little information about EBT, so that it has little or no effect on approval rates. However, ongoing participants will have much more information because they are in the EBT system, so there may be a relatively larger effect on exit decisions.[3]

There are reasons for believing that EBT might increase, decrease, or have an insignificant effect on caseload. EBT might raise participation if receiving benefits on an ATM-like card is perceived to be less stigmatizing than other methods of benefit issuance (such as food stamp coupons). Survey evidence from this and other EBT demonstrations suggests that recipients tend to prefer electronic benefits. On the other hand, the switch to electronic benefit provision could increase the costs to clients of participating in a program, at least in the short term, because it requires that clients attend a training session and learn a new method of receipt. Certain recipients, particularly the elderly and those receiving small benefit amounts, might find it not worth the effort, so that participation rates could decline. Finally, it may be that EBT would have very little effect on caseloads, because it does not change eligibility criteria, benefit levels, or other central program rules or policies. It changes only the ***method*** of benefit delivery. The existence of these competing hypotheses means there is no unambiguous expectation about the sign of the EBT effect.

It is possible that the switch to electronic benefits provision might have differing effects in the short and long run. For example, participation rates might decline initially because of difficulties associated with implementation. Case workers might require a little more time to process applications in the first month or so, or there might be delays caused by changes in recordkeeping or the need to attend training, or potential clients might be temporarily deterred

3. Another reason to estimate models of approvals and closures in addition to caseload is that trend effects may be more prominent in the latter. If trend effects are not adequately captured, it may be more difficult to isolate the EBT impact.

Table of Contents

from applying by the confusion of a new system of benefit issuance. In the long run, growth in caseload is capped by the growth in the eligible population. These possibilities point out the need to attempt to identify short-term impacts.

If EBT affects participation, it may have a larger effect for the Food Stamp Program than for AFDC, for two reasons. First, other research suggests that AFDC recipients are in general more dependent on welfare than food stamp clients.[4] Given this, food stamp participants may be more responsive to program changes than AFDC recipients. It is a reasonable conjecture (although far from certain) that the longer the median participation spell for a program, the smaller will be the effect on participation of a given program change. Second, EBT may have a smaller stigma-reduction effect for AFDC because AFDC benefits (in the absence of EBT) are issued as checks that can readily be cashed, not as coupons that must be redeemed in food stores for certain items.

Question (4) above offers another way to determine EBT's influence on program resources. EBT can affect total benefit payments by changing not just the level of the caseload, but also the ***composition*** of the caseload. If households entering or exiting the program due to EBT differ from other recipients in their average payment, then total benefits will change. Examining average benefits isolates this composition effect, if it exists. There are no strong expectations about the effect of EBT on average payments. Total payments are likely to vary directly with the change in caseloads, but average payments could vary directly or indirectly with caseloads. If EBT discourages low-benefit recipients more than high-benefit recipients, then average payments per case would increase. Total benefits could still decline if there is a proportionate reduction in caseload larger than the proportionate increase in average payments per case.

4. See Nancy R. Burstein and Mary G. Visher, *The Dynamics of Food Stamp Program Participation*, Abt Associates Inc., Cambridge, MA, March 1989; and Mary Jo Bane and David T. Ellwood, *The Dynamics of Dependence: The Routes to Self-Sufficiency*, Urban Systems Research and Engineering Inc., Cambridge, MA, 1983.

3.3 Qualitative Evidence: EBT Impacts on Participation

The econometric examination in Sections 3.4 and 3.5 provides a somewhat muddled picture of EBT effects on caseload. Especially for this reason, it is worth considering other information on impacts. We conducted three surveys that included questions relevant to participation. This section also examines graphs of state caseloads over time and by month of EBT implementation for any indication of changes in caseload trends since EBT.

Survey Evidence on Participation Decisions

Surveys of recipients and exiters add another dimension to the participation analysis. Besides answering the question of whether EBT has any impact on participation, surveys can be useful in identifying the reasons why there is or is not an impact. The three evaluation surveys useful in this regard are: (1) the post-implementation recipient survey; (2) a telephone survey of clients with dormant accounts; and (3) a telephone survey of recipients who requested that their cases be closed.

The post-implementation survey was by far the largest of the three in terms of the number of respondents and the scope. Chapter Two describes this survey in detail; here we note the questions relevant to participation. Exhibit 3.1 lists these questions and the responses.[5]

Although the number of respondents for these questions is small, there is a clear pattern: EBT had little influence on the application decision. Most respondents were not aware of EBT when they applied and, of those who were aware, over 90 percent said EBT did not influence their decision to apply for benefits. Of the one public assistance recipient and five food stamp recipients who said EBT ***did*** influence their decision, all said they would still have applied without EBT.[6] Based on these results, one would expect to find close to a zero impact in the approvals regression models.

In contrast to the post-implementation recipient survey, two smaller surveys focused on two groups of nonusers: those with dormant EBT accounts, and those who requested that their

5. Results are weighted to account for nonresponse. The weighted and unweighted results are not substantially different.

6. These numbers refer to six actual respondents, and therefore are unweighted.

Table of Contents

EXHIBIT 3.1

PARTICIPATION-RELATED QUESTIONS FROM POST-IMPLEMENTATION RECIPIENT SURVEY

	Yes	No	Number of Responses
Questions for Public Assistance Recipients			
Did you know that the Independence card method of receiving public assistance benefits was in place when you last applied?	36.6%	63.4%	133
Did knowing of the Independence card influence your decision to apply for public assistance?[a]	2.9%	97.1%	51
If the EBT system had not been in place, would you still have applied for public assistance?[a]	100.0%	0.0%	1
Questions for Food Stamp Recipients			
Did you know that the Independence card method of receiving food stamp benefits was in place when you last applied for food stamp benefits?	40.7%	58.9%	200
Did knowing of the Independence card influence your decision to apply for food stamp benefits?[a]	7.2%	91.0%	81
If the EBT system had not been in place, would you still have applied for food stamp benefits?[a]	100.0%	0.0%	5

[a] Asked of those recipients who answered "yes" to the previous question.

Source: Post-implementation recipient survey. Results are weighted to account for non-response.

cases be closed. Consequently, these surveys provide information about whether EBT influenced the exit decision.[7]

The survey of recipients with dormant accounts was conducted in a more informal manner than the recipient survey. The State provided a list of dormant accounts, from which 345 recipients in the Baltimore area were selected, reflecting a variety of account types, benefit amounts, and length of dormancy. Of these, 50 clients could be reached by telephone. The two reasons most frequently mentioned for nonuse were that clients believed themselves ineligible for benefits and that medical reasons prevented them from shopping.

7. Clients who do not access their benefits for 90 days have their cases closed.

Six of the respondents gave an EBT-related reason for not accessing their benefits. Two said they had not learned how to use the card, three said they did not like it, and one said there were too many system problems. Because the purpose of the survey was to identify any adverse impacts of EBT, respondents were asked leading questions about EBT, such as, "Was there anything about the Independence card you did not like, or did you have a bad experience with it that influenced your decision not to use it?" In spite of such explicitly leading questions, only 12 percent of the respondents mentioned any EBT-related reason for nonuse. Even if we ignore the bias in the survey and regard these results as unbiased, the implied impact on closures as a percentage of the entire caseload is very small. Therefore the results of the dormant account questionnaire are consistent with the post-implementation survey.

The third survey involved 159 recipients who had requested closure of their food stamp cases around the time that EBT was implemented in their county. The clients were identified from state computer files of closed accounts.[8] A total of 32 clients were contacted. As with the dormant account survey, the most frequently cited reason for requesting closure was ineligibility. Again, respondents were asked leading questions about whether EBT influenced their decision to leave the Food Stamp Program. Even with this encouragement, only two respondents said EBT was an influence. Both of these respondents indicated that it was not worth the trouble to learn how to use the card. Based on these responses, we can roughly estimate that ten of the full sample of 159 recipients requested case closure for EBT-related reasons. This represents an EBT-related closure rate of about two of every 10,000 food stamp recipients, based on the caseload in the counties surveyed, an extremely small impact.

In sum, the surveys give no evidence that EBT had a significant effect on either approvals or closures. These findings provide a benchmark against which to compare the results of the econometric analysis.

8. The Maryland Department of Human Resources provided tape listings of all cases closing between December 1992 and March 1993 for eleven counties and seven Baltimore city districts that converted to EBT during these four months. All cases who requested closure were identified and included in the survey sample. Only food stamp cases had requested closure during this period.

Table of Contents

The Growth in Caseload

In order to better understand what the econometric models of caseload in the next section are trying to explain, it is useful to examine what happened to caseloads during the period covered by this analysis, from early 1989 to late 1993. As shown in Exhibit 3.2, food stamp and AFDC caseloads in Maryland grew steadily and rapidly over most of the period, although AFDC cases leveled off after the end of 1991. Food stamp cases grew approximately 50 percent over this period, an annual rate of close to 12 percent. The AFDC caseload grew by 6 percent annually, even with the leveling off in 1992 and 1993. The DALP/general assistance caseload also grew rapidly, peaking at the end of 1991, and declining since then.[9]

EBT was not implemented anywhere in Maryland (except in the Park Circle district of Baltimore) before January 1992, and until March 1992 less than 5 percent of the total state food stamp and AFDC caseloads had switched to EBT. Therefore the upward trends in the graphs were clearly established prior to EBT. In addition, Maryland's growth in caseload mirrors national trends. During the period 1989-1992, the total number of U.S. food stamp recipients grew at an annual rate of about 10 percent, and the total number of AFDC recipients grew 6.5 percent annually.[10]

From these graphs it is not possible to identify changes in caseload coincident with EBT implementation, because EBT was implemented at different times in different counties and Baltimore city districts. Exhibit 3.3 shows EBT implementation dates across the state. An alternative is to look at statewide caseloads before and after EBT using each jurisdiction's EBT implementation date as a zero point. For example, to obtain total caseload one month after EBT was implemented, aggregate the caseload for each jurisdiction in the month after EBT began operating, regardless of the calendar month. If EBT had a large impact, it may be discernible as a change in the growth of caseload after EBT. These graphs are shown in Exhibit 3.4. The vertical line indicates EBT implementation date. Aggregating the data this way has the effect

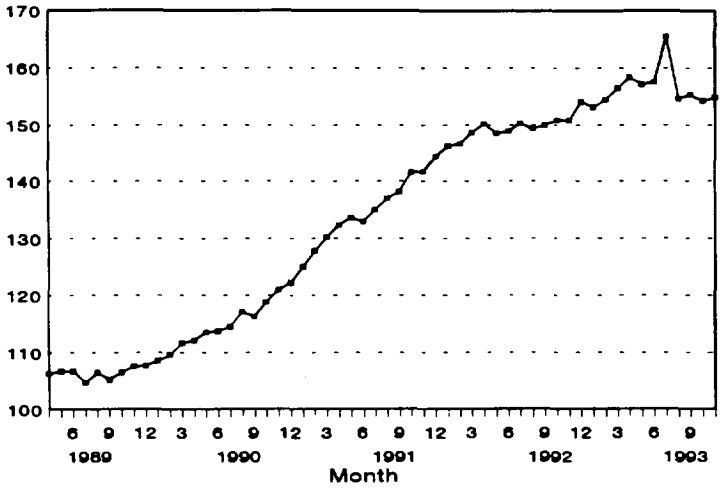
9. The numbers in the DALP graph are for counties only, because Baltimore city districts did not report caseload until July 1992. The July 1993 "spike" in caseload may be a reporting error, though it was experienced in nearly all jurisdictions. Excluding the July 1993 observations in the econometric analysis presented later in this chapter had little impact on final results, which include the July data.

10. U.S. House of Representatives Committee on Ways and Means, *Overview of Entitlement Programs: 1993 Green Book*, pp. 1622 and 688.

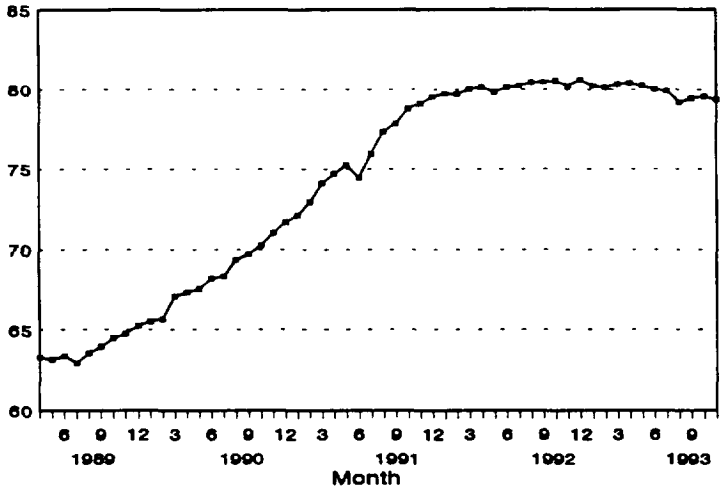
Table of Contents

Exhibit 3.2
Maryland Food Stamp, AFDC, and DALP Caseloads By Calendar Month

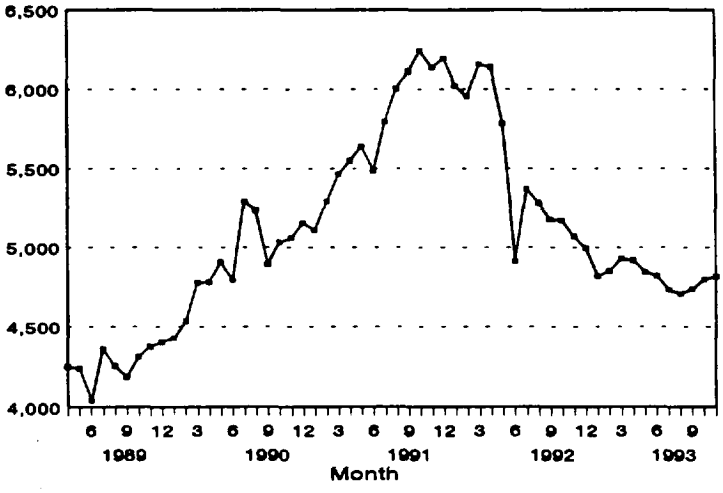
Total Certified Food Stamp Households (Thousands)



Total AFDC Paid Caseload (Thousands)



DALP Paid Caseload Excluding Baltimore City*



*DALP caseload data for Baltimore City are excluded because they are not available before July 1992.

Source: Maryland Department of Human Resources, Income Maintenance Administration, Statistical Report.

Table of Contents

of smoothing out the series, which should also make it easier to detect an effect of EBT on the trend in caseloads. These graphs show no evidence of an EBT effect.[11]

Although informative, the shortcoming of this approach is that it cannot control for other influences on caseload. For example, it is possible that EBT would have induced a large increase in the number of cases if not for the offsetting effect of some other factor. If this were true, the observed steady growth rate would be misleading. This is the reason for using an econometric model of caseload. Essentially, the econometric analysis compares mean caseload before and after EBT, controlling for other factors such as the business cycle or seasonal effects. The graphs illustrate the importance of controlling for the trend growth in caseload; if the models do not accomplish this, the higher average caseload after EBT might be spuriously attributed to EBT.

3.4 Econometric Analysis of Participation: Research Design and Data Sources

The basic approach to testing whether EBT affects each outcome of interest (approvals, closures, caseload, average payments) is to compare the average values for an outcome before and after EBT. We can attribute any difference to EBT if all other influences are removed. The purpose of the econometric models is to remove other influences. Whether the models are successful in capturing other effects on the outcome variables depends on understanding what determines caseloads and benefit payments, and on what data are available. As noted below, we do not have very good measures of one of the most important determinants of caseload, the size of the eligible population.

There are a total of twelve econometric models estimated, one for each outcome for food stamps, AFDC, and DALP. The models are similar in that the dependent variables are expressed as rates, and most of the covariates are common to all the models. Each regression is estimated using monthly data for all 23 Maryland counties and 15 Baltimore city districts for

11. There are not many observations after EBT because this method of aggregation requires that data be available for all jurisdictions in every month. Consequently, the number of months of data available after EBT is determined by the most recent date of EBT implementation. Because this was April 1993, and data are available through November 1993, there are only seven statewide post-EBT months for food stamps and AFDC. However, for the econometric analysis there are an average of 14 months of post-EBT data per jurisdiction.

EXHIBIT 3.3

EBT IMPLEMENTATION DATES BY COUNTY AND BALTIMORE CITY DISTRICT

Counties	EBT Startup
Cecil	January 1992
Montgomery	March 1992
Prince Georges	April 1992
Baltimore	June 1992
Carroll	September 1992
Harford	September 1992
Howard	September 1992
Allegany	October 1992
Anne Arundel	October 1992
Frederick	October 1992
Garrett	October 1992
Washington	October 1992
Caroline	December 1992
Kent	December 1992
Queen Anne's	December 1992
Talbot	December 1992
Dorchester	February 1993
Somerset	February 1993
Wicomico	February 1993
Worcester	February 1993
Calvert	March 1993
Charles	March 1993
St. Mary's	March 1993

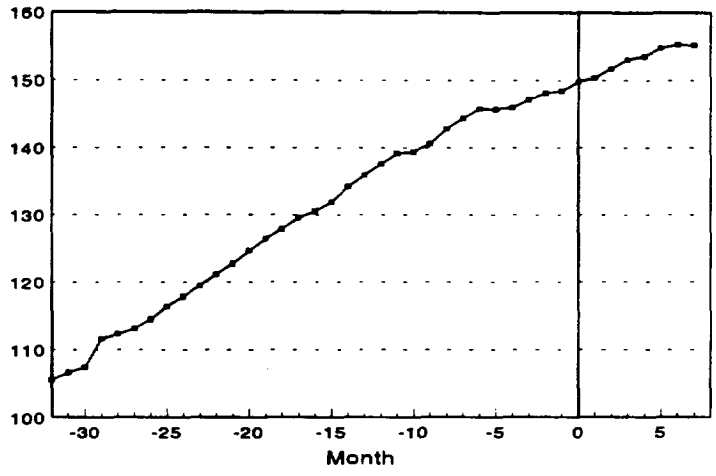
Baltimore City Districts	EBT Startup
Park Circle	November 1988
Liberty Garrison	June 1992
Steuart Hill	June 1992
Clifton Park	September 1992
Govans-Waverly	September 1992
Orangeville	September 1992
Mount Clare	October 1992
Westwood	October 1992
Cherry Hill	December 1992
Patapsco	December 1992
Rosemont	December 1992
Collington Square	February 1993
Upton	February 1993
Dunbar	April 1993
Johnston Square	April 1993

Source: Maryland Department of Human Resources

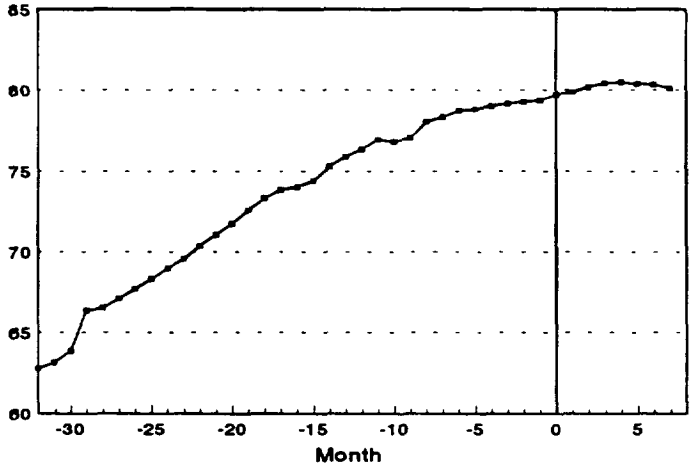
Table of Contents

Exhibit 3.4
Maryland Food Stamp, AFDC, and DALP Caseloads By EBT Month*

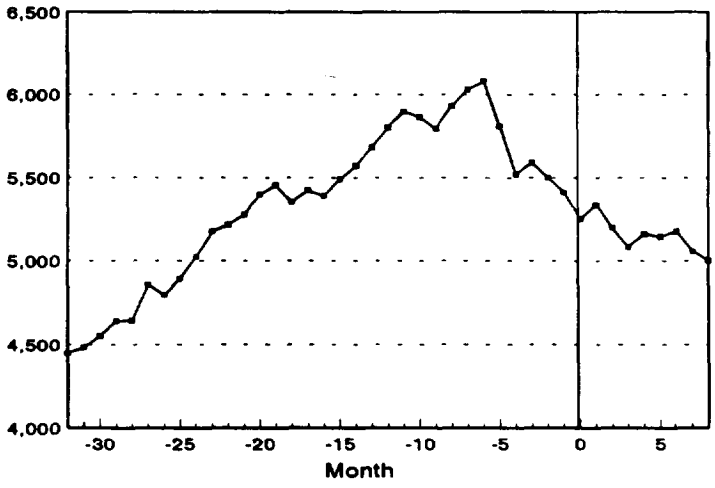
Total Certified Food Stamp Households (Thousands)



Total AFDC Paid Caseload (Thousands)



DALP Paid Caseload Excluding Baltimore City**



*"EBT month" is the number of months before or after EBT implementation. For example, the value in the Food Stamp graph for EBT month 0 is the total number of certified Food Stamp households as of each jurisdiction's EBT implementation date.

**DALP caseload data for Baltimore City are excluded because they are not available before July 1992

Source: Maryland Department of Human Resources, Income Maintenance Administration, Statistical Report.

the period January 1989 through November 1993, although the number of available observations differs across models.[12] The estimation method, pooled ordinary least squares with fixed jurisdiction and year effects, is also largely similar across models, except that the caseload and average payment models require a correction for autocorrelated errors that is not necessary for the approvals and closures regressions. Each of these points is discussed below in more detail.

Although we estimate models of total caseload, it is not strictly necessary, because the impact of EBT on caseload can be inferred from the effects on approvals and closures. Further, there are reasons for preferring the approvals and closures models. First, EBT can affect caseload only by affecting entries and/or exits, so it is better to look directly at these two avenues of impact than to examine the combined result. Second, because caseload is a stock concept while approvals and closures are flows, the former is likely to vary less and be more susceptible to spurious correlations. Nevertheless, we estimate all three models because the data are readily available and because the caseload results serve as a check of the results for approvals and closures. As discussed in Section 3.5, the estimated EBT effects are not entirely consistent across models, which suggests difficulties in controlling for time effects (especially in the caseload models) and/or inconsistency of the underlying data across approvals, closures, and caseload.

Specification of the Models

The econometric approach is to regress each of the outcome variables (expressed as rates) on: an EBT indicator; jurisdiction, year and seasonal indicators; and monthly unemployment rates. Exhibit 3.5 shows the specification of the models. Some of the models included additional covariates, as listed in the exhibit.

The EBT Indicator. The coefficient of interest is that on the EBT indicator. This coefficient measures the difference between average monthly outcomes for pre- and post-EBT months, holding constant the other effects in the model. We have no strong prior expectation about the size and sign of the EBT effect, because of the competing hypotheses discussed in Section 3.2.

12. Counties and Baltimore city districts were treated as equivalent jurisdictions.

Table of Contents

EXHIBIT 3.5

SPECIFICATION OF FOOD STAMP, AFDC, AND DALP PARTICIPATION MODELS

General Model Structure

$$N_{jt}/D_{jt} = b_0 + b_1*EBT_{jt} + b_2*UNEMP_{jt} + b_3*UNEMPLAG_{jt}(T) + b_4*SEAS(S) + b_5*YEAR(Y) + b_6*JURISD_j(J) + b_7*X_{jt} + u_{jt}.$$

Dependent Variables

$A_{jt}/POV90_j$ = Number of approvals in jurisdiction j in month t, deflated by the 1990 U.S. Census poverty population in jurisdiction j. For AFDC approvals, the deflator is the 1990 U.S. Census count of female-headed households with children under 18 in jurisdiction j.

$C_{jt}/PAID_{jt}$ = Number of cases closed in jurisdiction j in month t, deflated by caseload in jurisdiction j in month t-1.

$PAID_{jt}/POV90_j$ = Caseload in jurisdiction j in month t, divided by the 1990 U.S. Census poverty population in jurisdiction j. For AFDC caseload, the deflator is the 1990 U.S. Census count of female-headed households with children under 18 in jurisdiction j.

$PYMTS_{jt}/PAID_{jt}$ = Total dollar value of benefits in jurisdiction j in month t, divided by caseload in jurisdiction j in month t. This is a measure of average payments per case. Payments are converted to 1993 dollars using the annual change in each program's maximum benefits.

Covariates Common to All Models

EBT_{jt} = Indicator for whether jurisdiction j is operating under EBT in month t.

$UNEMP_{jt}$ = Unemployment rate for jurisdiction j in month t (for Baltimore districts, the citywide unemployment rate in month t). For the Food Stamp approval model, the ***change*** in the unemployment rate for jurisdiction j in month t is used instead.

$UNEMPLAG_{jt}(T)$ = A vector of six monthly lagged unemployment rates. The Food Stamp approvals model uses three monthly lagged changes in unemployment rate.

SEAS(S) = A vector of three quarterly indicators, for Q2-Q4.

YEAR(Y) = A vector of four yearly indicators, for 1990-1993.

EXHIBIT 3.5 (CONTINUED)

SPECIFICATION OF FOOD STAMP, AFDC, AND DALP PARTICIPATION MODELS

Covariates Common to All Models (continued)

$JURISD_j(J)$	=	A vector of indicator variables, one for each jurisdiction (except one).
X_{jt}	=	Additional model-specific covariates; see list below.
u_{jt}	=	The regression residual for jurisdiction j in month t.

Additional Model-Specific Covariates

Food Stamp Approvals, Closures, and Caseload

$MIGRANT_{jt}$	=	Indicator for whether jurisdiction j has a significant number of migrant workers in month t (for Somerset and Caroline Counties only).

Food Stamp Average Payments

$OCT89_t$, $OCT90_t$, $OCT91_t$	=	Indicators for whether month t is after October 1989, October 1990, or October 1991, respectively, the dates of changes in food stamp benefits from 1989-1993.
$AFDCBEN_t$	=	AFDC maximum benefits for a family of three in month t.

AFDC Average Payments

$JUL89_t$, $JUL90_t$, $DEC91_t$, $NOV92_t$, $JUL93_t$	=	Indicators for whether month t is after these months, corresponding to dates of changes in AFDC benefits from 1989-1993.

DALP Average Payments

$JUL89_t$, $JUL90_t$, $DEC91_t$, $MAY92_t$, $NOV92_t$, $JUL93_t$	=	Indicators for whether month t is after these months, corresponding to dates of changes in DALP benefits from 1989-1993.

Table of Contents

The EBT indicator is defined to equal 1 for each jurisdiction-month after EBT implementation, and 0 in every other month. The main alternative specification of the EBT effect tested was to distinguish short-term and long-term impacts using two EBT dummy variables. For example, a short-term dummy, equal to 1 for only the first three months of EBT implementation, was included with a long-term dummy, equal to 1 in all subsequent months. Break points other than three months were also tested. For nearly all the models this specification did not significantly alter the results, so the simpler specification was used in the final models.

The Other Covariates. The other independent variables take into account non-EBT influences on outcomes. Unemployment rates are intended to capture the effects of the business cycle on participation, and are expected to be positively related to approvals and caseload, and negatively related to closures. Lagged unemployment rates are included because individuals may not apply for public assistance immediately upon becoming unemployed, instead drawing down their savings or relying on unemployment benefits. Six months of lags are included because unemployment benefits normally expire after six months. In the food stamp approvals model only, the change in the unemployment rate is used rather than the level, because previous research suggests this may be a better specification.[13]

Most of the other covariates are dummy variables. The quarterly and yearly indicators control for seasonal and long-term variations in participation and benefits. The quarterly indicators are needed if average monthly outcomes differ across seasons, and there is a difference in the seasonal composition of pre- and post-EBT months. The yearly indicators are included to attempt to capture the long-term growth in caseload, seen in the graphs in Section

13. See, for example, William L. Hamilton *et al.*, *Factors Affecting Food Stamp Certification Cost.* Cambridge, MA: Abt Associates Inc., 1989. The change in the unemployment rate was also tested for the AFDC and DALP approval models, but it did not do an obviously better job of capturing cyclical effects on approvals. Appendix D lists other studies of food stamp and AFDC participation models that were reviewed for this analysis.

3.2, that is not attributable to EBT.[14] The jurisdiction dummy variables account for different average outcome levels in each county and city district over the entire sample period.

There are a few additional model-specific covariates. The food stamp models (except average payments) include an indicator for migrant workers in two Eastern Shore counties during the summer months. The food stamp and DALP average payment models include dummy variables for months in which mandated benefit levels changed; for example, food stamp benefits are typically adjusted in October every year.[15] The food stamp payment model includes the level of AFDC benefits, because these are counted as income in determining food stamp benefits.

Deflating the Dependent Variables. The dependent variables in every model are deflated because of the large variation in size across jurisdictions. If the dependent variables were not deflated, observations for larger jurisdictions would tend to have greater influence on the coefficient estimates. This may be desirable for the purpose of calculating an overall state impact of EBT. However, the size variation also leads to heteroskedasticity, or differences in the variance of the error terms across jurisdictions. (Specifically, observations for larger jurisdictions are likely to have larger residuals.) A consequence of this is that standard errors of the coefficient estimates will be biased, so that *t*-tests of statistical significance are invalid.

A second problem of estimating the models in levels is that it would lead to overestimates of the EBT effect, because the larger jurisdictions in Maryland tended to implement EBT first. Other things equal, the average level of the outcome variables will be higher after EBT than before EBT because a disproportionate share of the post-EBT observations

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14. Another option for capturing long-term growth in caseload is to include a time trend, or a polynomial in time. Although this approach can quite accurately model trends, deciding on a particular specification is often somewhat ambiguous and can only be done on an *ad hoc* basis, i.e., it is not clear what model of the time series to use, and the choice of model can have significant effects on the other coefficients in the regression. Some exploratory analysis showed the estimated EBT impacts to be very sensitive to the inclusion of trend terms. Consequently, it was judged preferable to follow the more conventional practice of including year dummies, which leads to an unambiguous specification, but may not fully capture the growth in caseload.

15. Payments are converted to 1993 dollars using the change in maximum benefits in each program for a particular family size. For example, if maximum food stamp benefits for a family of four are increased by 3 percent effective October 1992, then actual payments for the prior year are multiplied by 1.03, to put the benefits on a constant-dollar basis. Although this might seem to eliminate the need for dummy variables to indicate periodic benefit changes, it was determined that the dummy variables were still needed. One likely reason is that mandated benefit changes differ across family sizes.

Table of Contents

are for larger jurisdictions. This higher post-EBT mean would generate a positive estimated EBT impact, but it would be a spurious estimate because it is an artifact of the timing of implementation, and has nothing to do with EBT itself.

Deflators are chosen to yield dependent variables that are similar in size across jurisdictions, and that are hypothesized to be potentially affected by EBT. Approvals and caseload are deflated by a proxy measure of the potentially eligible population, while closures and payments are deflated by caseload as of the end of the previous month. These deflators yield measures of approval and closure ***rates***. Logically, new approvals are a function of the number of eligible nonrecipients, so the approval rate is the number of new approvals relative to the number of eligible nonrecipients. Similarly, closures depend on the number of existing cases, so the closure rate is derived by dividing by the existing caseload. These rates are appropriate dependent variables, because EBT will have an effect on the ***level*** of approvals and closures only if it affects the ***rate*** of approvals and closures.

The proxy measures for eligible population used for the approvals models are the poverty population in each jurisdiction from the 1990 U.S. Census, for food stamp and DALP approvals and, for AFDC, the number of female-headed households with children younger than 18 by jurisdiction, also from the 1990 Census. Although these may be the best available measures, they are less than ideal because they are fixed over the sample period, and because neither poverty status nor the number of female-headed households is an infallible indicator of eligibility for food stamps, DALP, and AFDC. This is a potentially significant shortcoming of the models, because the size of the eligible population is perhaps the most important predictor of the number of participants.

Additional Covariates Tested but not Included in the Models. Several additional covariates were tested for inclusion in the models in an attempt to improve fit, but were ultimately rejected. In the AFDC models we tried three variables that have been used to predict AFDC statewide caseloads in Maryland: the Baltimore Sun index of help wanted advertisements; the national unemployment rate for female household heads; and an index measuring the gain from work relative to receiving AFDC benefits (roughly equal to after-tax wages minus

AFDC benefits).[16] A limitation of these series for our analysis is that they are not available by jurisdiction. Only the help-wanted index improved model fit, but it was not kept because it duplicated the purpose of the unemployment rate variables (to control for business cycle effects), and had the comparative disadvantage of not varying by jurisdiction.

We also tried including monthly data on food stamp caseloads in states near Maryland, in order to capture trends in caseload not accounted for by the other covariates. These series were highly collinear, and the estimated EBT coefficient was sensitive to which state variables were included. Because there was no basis for choosing a particular state series, and because exogenous trends in caseload are in principle already accounted for in the model by monthly caseloads in Maryland jurisdictions that had not yet implemented EBT, these variables were not included.

Estimation Methods

The models were estimated by applying ordinary least squares to the pooled data set, and allowing for separate intercepts for each jurisdiction. That is, for each model a single regression was run using the monthly data for all 38 jurisdictions, with the coefficients constrained to be the same across jurisdictions, except for a separate dummy variable (intercept) for each jurisdiction. The advantage of pooling over computing separate regressions for each jurisdiction is that it yields more precise coefficient estimates. Allowing for separate group-level intercepts is probably the most commonly used method of pooling; this approach is sometimes called the fixed-effects method or the least-squares-with-dummy-variables method. The rationale for different intercepts is that jurisdictions may differ in their average outcomes (e.g., approval rates) for reasons that are relatively fixed over time, such as differences in characteristics of the

16. These data were made available by Michael Conte of the Regional Economic Studies program at the University of Baltimore. For a more detailed description, see Michael Conte, Fereidoon Shahrokh and Jane Stavely, *Forecasting the AFDC Caseload in Maryland*, Jacob France Center for Business and Economic Studies, University of Baltimore (undated).

eligible population or claims processing procedures. The jurisdiction dummy variables factor out these fixed effects, which might otherwise affect the other coefficient estimates.[17]

Despite deflating the dependent variables, conventional tests showed that all the models exhibited heteroskedasticity, so the data were transformed to correct for this problem.[18] As noted above, heteroskedasticity causes the estimated standard errors of the parameter estimates to be biased, which will invalidate *t*-tests of significance.

Finally, the regression residuals for the caseload and average payment models for all three programs displayed evidence of autocorrelation, where the residual in one month is correlated with the residual in the next month. As with heteroskedasticity, autocorrelation does not bias the coefficient estimates but, in the case of positive autocorrelation, the standard errors estimated by ordinary least squares will ordinarily be too small, generating significance levels that are too high. The data in the caseload and average payment models were transformed to correct for first-order autocorrelation within each jurisdiction.[19] No such correction was needed for the approvals and closures models.

Data Sources

The *Monthly Statistical Report* of the Maryland Department of Human Resources (DHR) provided data on approvals, caseload, and benefit payments for all three programs.[20] Data

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17. A somewhat less commonly used alternative to the fixed-effects approach is the random-effects model, which posits a single intercept, and incorporates differences across groups within the error term. The random effects approach was tested on a few of the models, and the results were not significantly different.

18. In brief, the correction for heteroskedasticity is a two-stage process. In the first stage, an OLS regression is run on the unweighted data. The residuals from that regression are used to estimate error variances for each jurisdiction. The data are then transformed according to: $X_{jt}^{*} = X_{jt}/(errvar_j^{0.5})$, where $errvar_j$ is the estimated error variance for jurisdiction j. The second stage involves running an OLS regression on the transformed data.

19. The first step in the transformation is to estimate the degree of autocorrelation separately for each jurisdiction. Then the dependent and every independent variable is transformed as: $X_{jt}^{*} = X_{jt} - rho_j * X_{jt-1}$, where rho_j is the estimate of autocorrelation for jurisdiction j. The regression is run on the transformed variables. This correction preceded the transformation for heteroskedasticity described in the previous note.

20. The report also provided data on closures in AFDC and DALP. Food Stamp Program closure data were collected from DHR files.

for the 23 counties were available for 59 months, from January 1989 through November 1993,[21] and data for the 15 Baltimore city districts were available for most models for 57 or 56 months, from March or April 1989 through November 1993. Therefore, a maximum of 2,197 to 2,212 observations were potentially available for each model. However, because of shifts in territory across four Baltimore city districts, observations for these districts prior to the shifts were deleted. This reduced the total number of observations by 106 or 110, depending on the first month of data.[22] For most models only a few other isolated observations were missing. The exceptions were: AFDC average payments, for which district data were not available before March 1991; and DALP caseload and average payments, for which district data were not available before July 1992.

For the covariates, the Maryland Department of Employment and Economic Development provided monthly unemployment data for counties and Baltimore city as a whole. The 1990 Census provided poverty population and a count of female-headed households with children under 18, by county and district. The *1993 Green Book* of the House Ways and Means Committee was the source for food stamp benefit levels. The remaining data were supplied by the Office of Policy Administration at DHR (AFDC and DALP benefit levels and dates of change).

3.5 Results of Econometric Analysis

The regression results are somewhat inconsistent within each program, but for the most part they suggest that EBT has little effect on participation. Exhibit 3.6 shows the estimated EBT impacts for all twelve regression models; Appendix E lists the full results for each model.

Table of Contents

EXHIBIT 3.6

RESULTS OF FOOD STAMP, AFDC, AND DALP PARTICIPATION MODELS

Dependent Variable	Estimated EBT Impact[a]
Food Stamp Results	
Monthly approvals/1989 poverty population	-0.3%
Monthly closures/monthly certified households	-2.7%†
Monthly certified households/1989 poverty population	12.7%**
Monthly dollar FS benefits/monthly certified households	-1.8%*
AFDC Results	
Monthly approvals/1989 households headed by females with children < 18	0.0%
Monthly closures/monthly paid cases	0.1%
Monthly paid cases/1989 households headed by females with children < 18	4.7%**
Monthly dollar AFDC benefits/monthly paid cases	-0.6%†
DALP Results	
Monthly approvals/1989 poverty population	7.6%**
Monthly closures/monthly paid cases	-0.1%
Monthly paid cases/1989 poverty population	-2.2%
Monthly dollar DALP benefits/monthly paid cases	1.0%

[a] Calculated as the estimated EBT coefficient (from regression models) divided by the pre-EBT mean of the dependent variable.

** Statistically significant at the 1 percent level.
* Statistically significant at the 5 percent level.
† Statistically significant at the 10 percent level.

Overall, the results show no evidence of a clear EBT impact. For four of the six approval and closure models, the estimated EBT effect is statistically insignificant. For two of the three programs, the ***direction*** of the impact from the caseload model is inconsistent with the direction implied by the net impact of the approval and closure models. For none of the three programs is the ***size*** of the impact from the caseload model consistent with the size of the net effect implied by the approval and closure models.

For the Food Stamp Program, EBT is estimated to cause a large (12.7 percent) increase in caseload, a 2.7 percent reduction in the closure rate, a 1.8 percent reduction in average benefits, and no significant impact on approvals. The estimated effect on caseload is much too large to be consistent with the estimated effect on closures. It may be that the caseload results are affected by the strong upward trend in cases over the sample period illustrated in Exhibit 3.2. An examination of the residuals in the caseload model showed clear evidence of trend effects that were not fully captured by the covariates; it is possible that the model spuriously attributes some of the trend growth in caseload to EBT. For this reason, and because the other three food stamp models show evidence of a much smaller EBT impact, the caseload results do not seem credible.[23]

The AFDC results are even less indicative of an EBT effect than are the food stamp results. EBT is estimated to have no effect on approvals or closures, but a significant positive influence on total cases. The caseload outcome is inconsistent with the impacts for entries and exits; caseload cannot increase if approvals and closures are unaffected. Average payments show a small decline attributed to EBT. This is not necessarily inconsistent with the estimated increase in caseload; if EBT causes a disproportionate increase in low-benefit recipients, then caseload could increase while average payments would decline. Due to the lack of internally consistent results from the other three AFDC models, however, the AFDC results provide no convincing evidence of an EBT effect.

For the DALP models, only the approval regression has an estimated EBT impact that is significantly different from zero, and the impact is large. Such a sizeable effect should be at least partly transmitted to caseload, but the estimated caseload impact is not even in the same direction. In addition, if EBT is so attractive to new DALP applicants, it is surprising that it does not change the behavior of existing DALP recipients. In view of the contradictory results,

23. Besides including year and quarterly dummies, an alternative approach for weeding out trend effects is to use the ***change*** in caseload, rather than the level, as the dependent variable. Tests of this approach, using various specifications of the EBT indicator, yielded an estimate of EBT's impact on caseload that was not significantly different from zero. These results reinforce the conclusion that EBT has an insignificant impact on program participation. However, detailed results are presented only for models using caseload levels because the appropriate lag structure for EBT impacts on program participation changes was not evident from the estimated models.

Table of Contents

and the fact that the estimated EBT effect is not statistically different from zero for Food Stamp and AFDC approvals, a 7.6 percent increase in DALP approvals seems implausible.

There is not much additional information to be gleaned from the other coefficients in the models, given in Appendix E. The unemployment rate coefficients tend to have both positive and negative signs within each model, and vary in significance. In the Food Stamp models, the migrant indicator is positive and significant, as expected, and the additional covariates in the average payments model—the October cost-of-living indicators and the AFDC benefit level—all behave as expected. In all the models, the yearly and quarterly indicators tend to be significant, as do the jurisdictional fixed effects. There were no strong prior beliefs about the signs on these variables.

In sum, the econometric analysis provides no compelling evidence of an EBT impact on participation. Our judgment is that the approval and closure models are the most reliable, and our best point estimate of an EBT effect is zero. However, given the difficulty of identifying the determinants of participation, the lack of fully satisfactory covariates (especially an adequate measure of the eligible population), and the inconsistency of the estimates, these results are far from conclusive. Further insight might be gained as additional post-EBT data become available, and from other methods of capturing time effects.

3.6 CONCLUSIONS

The overall picture that emerges from both the qualitative and quantitative evidence is that the EBT system as implemented in Maryland has had little or no effect on food stamp, AFDC, and DALP participation. Four of the six econometric models used for new approvals and case closures, and half of all the models, produced estimated EBT impacts that were not statistically different from zero. The estimates from the caseload models are inconsistent with the approval and closure results, but there are reasons for being relatively skeptical of the caseload estimates.

Surveys of AFDC and food stamp recipients showed that most were not aware of EBT before they applied for benefits and, of those who were aware, over 90 percent said EBT did not influence their decision to apply. Among the handful of respondents who said that EBT influenced their decision to apply for public assistance or food stamps, all said they would have

applied anyway. Thus, the survey findings corroborate the conclusion that EBT had little or no effect on food stamp, AFDC, or DALP caseloads.

CHAPTER FOUR

EBT SYSTEM IMPACTS ON PARTICIPATING RETAILERS

Food retailers play a very important role in an EBT system, as they do in a coupon-based food stamp program. Food retail establishments are the only authorized locations where food stamp recipients may use their program benefits, exchanging paper coupons or electronic credits for eligible food items. Without the active support of the retail food industry, the Food Stamp Program would not be able to deliver its benefits.

Given the fundamental procedural changes that EBT introduces among food retailers, it is clear that any evaluation of the expanded EBT demonstration in Maryland would be incomplete without evidence of the impacts the system brings to the retail food industry. This chapter examines and quantifies these impacts.

4.1 INTRODUCTION

At the end of 1991 approximately 3,300 food retailers in Maryland were authorized to accept food stamps. A small number of these retailers had been participating in Maryland's EBT pilot since November 1989. Most, however, knew little about EBT systems or the commercial debit and credit card systems after which EBT systems are patterned.

Over the next 12 months the new EBT vendor, Deluxe Data Systems, introduced EBT to nearly all the retailers in the state. Between January and June of 1992, nearly 1,200 retailers in Cecil, Montgomery, Prince Georges and Baltimore Counties and several districts within Baltimore were added to the system. During this time Deluxe informed each of these retailers about the project, entered into written contracts with them, installed EBT terminals and associated equipment at their checkout stands, and trained store personnel on how to use the system. In July, each of these retailers received new terminals as transaction processing responsibilities switched from ACS/TransFirst, the original EBT vendor, to Deluxe. By the end of 1992, the approximately 1,800 retailers in the remaining parts of the state were added to the new EBT system.

In addition to accepting food stamp benefits through the EBT terminals, all retailers could accept cash assistance benefits as well. That is, recipients of cash benefits that were

issued through the Maryland EBT system could use their Independence cards to purchase items in the store. A number of stores also agreed to allow cash assistance recipients to withdraw cash with their Independence cards, though sometimes with restrictions on how much cash could be withdrawn. Finally, about 14 percent of the food retailers in the state use their EBT terminals for participation in the MOST network's commercial debit and credit card system.

Research Questions and Research Design

The primary focus of the analysis is to measure the impacts of the EBT system on retailers' operating costs, especially with regard to participation within the Food Stamp Program. This focus is justified even though retailers incur some paper-based and EBT costs associated with cash assistance programs. For the retailers in our evaluation sample, about 85 percent of all EBT redemptions are food stamp redemptions. When food stamp coupon redemptions are added to the reported value of assistance checks that sampled stores cashed, food stamp redemptions represent about 89 percent of the total. Thus, nearly all impacts on retailers' operating costs associated with the switch to EBT will be food stamp related.

The analysis of retailer costs focuses on the comparison of EBT and coupon system costs across the following eight types of cost that retailers incur as a result of participating in the Food Stamp Program:

- Checkout times for food stamp EBT purchases relative to food stamp coupon transactions;
- Handling, depositing, and reconciling food stamp redemptions;
- Training new checkout clerks on completing EBT and paper-based transactions;
- Reshelving items not bought by customers because an insufficient balance or system problem prevented the purchase;
- The interest foregone during the time between a purchase and the availability of retailer cash funds;
- Permanent losses due to accounting errors;
- Space used by EBT store equipment; and
- Other fees paid by retailers for coupon and EBT participation.

In addition to measuring cost impacts, the analysis examines retailers' perceptions and opinions about the EBT system, looking at three major questions:

- Do retailers prefer the paper or the EBT system, and why?
- What impacts on major areas of store operations do retailers perceive since implementation of the EBT system?
- What is the perceived effect of EBT on food stamp fraud?

These perceptions, which are obviously more subjective than the analysis of EBT impacts on operating costs, are nevertheless equally important. If EBT systems are to succeed, they must have the support of the food retail industry. While impacts on costs are clearly important, retailers are likely to consider other aspects when evaluating this new means of accepting food stamp and cash assistance benefits. Retailers' stated perceptions of the EBT system are perhaps the best overall gauge of the level of their support for the system.

Research Design. The analysis of effects on participating retailers employs a pre/post longitudinal design. Data on retailer perceptions and seven of the cost elements (all cost components except checkout times) come from in-store interviews with a sample of retailers in Maryland. Information on time completing purchases at checkout counters comes from observation data.

Evaluation surveys of retailers yield three samples of interest. The first is the full ***pre-implementation sample***, which is the most representative sample for analyzing costs under the paper-based issuance systems. The second is the full ***post-implementation sample***, which likewise is the most representative sample for analyzing EBT-related costs and retailers' opinions about EBT. The third sample, a subset of the first two, is the ***"pre/post sample,"*** the sample of retailers present in both pre- and post-implementation samples. This last sample, though somewhat smaller, is the best one for the analysis of EBT impacts on retailer costs; the longitudinal nature of the sample avoids the confounding effect of inter-store differences in cost structures (e.g., average hourly wages and which employees are responsible for which tasks).

A two-stage, cluster sampling process selected retailers for the initial pre-implementation survey. The first stage sampled 26 zip code clusters, stratified by urban/rural location,[1] from all parts of the state except Cecil and Montgomery Counties and a few parts of Baltimore, where retailers had converted to EBT before the survey was conducted. The 26 clusters were selected using probability-proportional-to-size sampling, with size defined as the number of Food Stamp Program-authorized retailers in a zip code cluster. We then classified all stores by store type (supermarkets, grocery stores, convenience stores, and "other stores"), and drew random samples of each store type from each cluster.

The pre-implementation retailer survey was conducted between March and August of 1992, prior to EBT system implementation for the stores in the sample. The completed pre-implementation sample of 210 retailers includes 7 percent of food retailers in the relevant population.

The post-implementation retailer survey started in June 1993 (three months after recipients in the last areas of the state were converted to EBT) and ended in October. Interviews were completed with 150 of the 210 retailers interviewed the previous year.[2] An additional 20 retailers from Cecil and Montgomery Counties and the Park Circle district of Baltimore were interviewed to yield a representative statewide sample of retailers operating under EBT.

Estimated impacts on checkout productivity are not based on retailer interviews. The EBT system's impact on checkout productivity is estimated using data collected during pre-implementation and post-implementation observations at checkout counters in 45 stores. Each store was observed for one day during each round of observations. Observers with stopwatches recorded the duration and characteristics of transactions of all payment types (e.g., cash, personal check, food stamp coupon, EBT). Observation data collection periods roughly coincided with retailer interviews.

Appendix F provides tables that describe the final disposition of these samples.

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1. Stores were classified as urban if they were located in a zip code defined as "urbanized" by the U.S. Census Bureau. Zip code clusters were formed from contiguous zip codes having the same Census classification (i.e., urbanized or not).

2. Of the 60 stores that were not re-interviewed, 11 had gone out of business, 18 were not participating in the EBT demonstration, 11 refused to be interviewed, and the remaining 20 could not be reached for a variety of reasons; see Appendix F for more detail.

Research Approach

This chapter presents an analysis of retailer opinions and retailer costs for entire relevant samples of retailers as well as those within important subgroups. Throughout our analysis, we present retailers' opinions and cost changes ***within particular store types***. The store type analysis is based on FNS' standard categories of retailer classification. Store types with similar characteristics were combined into four general categories: supermarkets, grocery stores, convenience stores, and all other stores.[3]

To allow cost comparisons between different-sized stores, retailers' estimated participation costs are ***standardized in terms of the cost incurred per $1,000 of redemptions***. In the pre-implementation survey, all cost questions were framed in terms of monthly costs to deal with food stamp coupons.[4] Thus, each store's pre-implementation costs are standardized with respect to that store's monthly volume of food stamp redemptions.

In the EBT system, procedures to handle food stamp and cash assistance transactions are nearly the same, and it was not meaningful to ask retailers to try to allocate their time dealing with the EBT system into separate estimates for food stamp and cash assistance program transactions. Accordingly, nearly all EBT costs reported by retailers represent the sum of costs associated with the food stamp and cash assistance programs. Thus, we standardize these monthly costs by dividing costs by the ***sum*** of food stamp and cash assistance redemptions. When this is done we are implicitly assuming that, on average, standardized EBT costs associated with food stamp sales and activities are the same as standardized costs associated with EBT use by cash assistance clients.

Estimating EBT's Impact on Costs. The effect of the EBT system on stores' participation costs is computed, for each cost component, as the store-level difference between standardized coupon and EBT costs. The effect of the EBT system on handling costs for a store, for example, is computed as the difference between the store's coupon and EBT handling costs,

3. Based on FNS' two-digit classification code, we treated all SM (supermarket) stores as "supermarkets," all GS (small/medium grocery) and SF (specialty food) stores as "grocery stores," and all CS (convenience store) and CG (combination grocery/gas) stores as "convenience stores." All other store types were treated as "other stores."

4. The pre-implementation retailer survey also asked about store costs related to cashing and depositing public assistance checks. Information about these costs is presented in Section 4.12.

when each has been standardized per $1,000 in benefits. Formally, if POSTCOST and PRECOST are a store's post- and pre-implementation monthly handling costs; POSTRED and PRERED are a store's post- and pre-implementation monthly redemptions; WT is a store's sample weight adjusted for EBT redemptions (explained below); and i designates each of the 150 stores in the pre-post sample, then store i's cost change is:

$$CCHANGE_i = ((POSTCOST_i) / (POSTRED_i)) - ((PRECOST_i) / (PRERED_i))$$

and the weighted estimate of the mean of these changes is:

$$\sum_i WT_i \times CCHANGE_i / (\sum_i WT_i)$$

For checkout costs, the mean effect for each store type observed is assigned to all stores of that type within the pre/post retailer sample.[5] The eight component cost changes are then summed for each store to generate an overall EBT effect for the relevant sample—all stores, stores of the same type, stores with the same urban/rural status. We perform hypothesis tests on the mean of these pre/post cost differences; the null hypothesis is that the mean change in costs is zero. The sample variance calculation performed for these tests adjusts for the influence of the cluster-based sampling strategy described above.

Sample Weights. Sample weights are intended to produce results that most closely reflect the experience of retailers throughout the sample universe, given our two-stage cluster sampling approach described earlier. These weights consist of three components. The first component is a cluster weight, which gives relatively more weight to stores from smaller clusters, which were undersampled in the first stage. The second component is the within-cluster weight, which gives relatively more weight to stores of store types which were undersampled in the second stage. The third component adjusts for the presence of stores that were initially in the pre-implementation sample, but that were later determined to be ineligible for study because they either went out of business or no longer participated in the Food Stamp Program. These weights are calculated separately for the pre-implementation sample, the post-implementation sample, and the pre/post sample.

5. The estimated effect for convenience stores is assigned to the "other store" category. Checkout procedures are often so diverse in the "other store" category (which includes, for example, produce stands) that estimation of EBT impacts on checkout procedures was deemed unreliable.

We used the above sample weights to estimate some of the numbers reported in this chapter, specifically retailers' perceptions (Exhibits 4.1 through 4.5, to follow) and average monthly redemption levels. We also used the sampling weights to estimate average participation costs for the full pre-implementation sample and the full post-implementation sample; we present these average participation costs and explain their calculation in Appendix G.

We modify the sample weights for use in our estimates of ***cost changes***, obtained using the pre/post sample. If the retailer participation cost data were weighted only by the sampling weight described above, then the standardized costs of a store with $1,000 of redemptions each month would receive the same weight as a store with $50,000 in redemptions each month. A high-redemption store should naturally receive more weight than a low-redemption store in the estimation of statewide EBT impacts per $1,000 of redemptions. In addition, because the data sometimes suggest the presence of scale economies in stores' costs of processing redemptions (i.e., standardized costs for larger stores tend to be lower than standardized costs in smaller stores), omitting this size weighting could ***overestimate*** the true participation cost per $1,000 of benefits redeemed. Accordingly, in our analysis of cost changes, we multiply the weights discussed above by the store's monthly level of food stamp redemptions. With this modified weight, cost data from larger stores contribute more to the final estimate of standardized costs than cost data from smaller stores.

No Information on Store Profits. It should be noted that the cost estimates presented in this chapter are part of retailers' ***total operating costs***. Because stores participate in the Food Stamp Program on a voluntary basis, one must assume that these participation costs are more than offset by increased store revenues. The paper- or EBT-based participation cost estimates presented below do not, by themselves, reflect any particular impact on store profits; the relationship between operating costs and revenues is not addressed in this study.

Accounting for Inflation. This chapter's estimation of EBT impacts on retailers' operating costs does not attempt to adjust for wage inflation. Only one year separated the periods when the pre-implementation and post-implementation data were collected. Inflation adjustments were deemed not necessary when analysis of pre-implementation and post-implementation wages revealed no significant differences among average hourly wages of a number of different categories of employees (e.g., cashiers and several categories of managers).

Highlights

By wide margins, food retailers in Maryland preferred the EBT system to the paper-based issuance systems it replaced. Overall, nearly four out of every five retailers preferred EBT. Only about 10 percent preferred benefits issued in the form of food stamp coupons and assistance checks. Nearly all supermarket respondents preferred EBT. The next most supportive group was convenience store operators, where the margin of preference is over nine to one. Grocery stores preferred EBT over paper issuance by over six to one. Even the least supportive group, other stores, preferred EBT to paper by nearly four to one.

This preference for EBT comes despite the fact that EBT does not appear to have reduced retailers' operating costs. Combining all store types, EBT had virtually no impact on operating costs; costs fell by only six cents per $1,000 of food stamp benefits redeemed. Although the absolute magnitude of the estimated EBT impact on operating costs is greater within each of the four store types examined, ranging from a decline of $1.81 per $1,000 of benefits redeemed for supermarkets to an increase of $3.15 per $1,000 for other stores, none of these within-store type impacts is statistically different from zero.

The cost impacts are small because, while EBT reduced stores' handling costs, these cost reductions are offset by increases in checkout costs and the opportunity cost of counter space devoted to the placement of EBT terminals. The EBT system's impacts on all other cost components are either small, statistically insignificant, or both.

The Maryland EBT demonstration is the first demonstration in which retailers' participation costs did not decline. The main reason is that, while handling costs fell in Maryland under EBT, they did not fall as much as in other demonstration sites. Given that Maryland is the first demonstration site to expand EBT into rural areas, one conjecture is that an urban-rural difference in EBT impacts might explain the lack of an overall impact, with EBT generating fewer savings or more costs for rural stores than urban stores. This appears to be the case for convenience stores and other stores, but not for supermarkets and grocery stores. Thus, the finding of no overall EBT savings in Maryland is not due to the implementation of EBT in rural areas of the state.

Obtaining precise estimates of the cost impacts of EBT on stores' operating costs is difficult. Retailers often had some trouble quantifying the costs they incurred to handle food stamp coupons or to deal with the EBT system. It is therefore informative to examine their

opinions about the impacts of EBT. Most retailers said that EBT had no impacts on store operating costs, which is consistent with the evaluation's estimated impacts. Most, however, also said that EBT had no impact on checkout productivity, which runs counter to our estimates of EBT impacts on how long it takes to process a food stamp sale. Finally, most retailers also said that EBT had no impact on total sales or store profits. Of those retailers who thought that EBT had affected store operations, however, more thought sales and profits had increased rather than declined.

When asked whether the EBT system had affected levels of food stamp fraud, very few stores said that fraud increased under EBT. Across all stores, just over one half thought that EBT reduced food stamp fraud. About 45 percent perceived no change in levels of fraud after system implementation.

4.2 Retailer Perceptions of the EBT System

This section presents the perceptions of all 170 retailers in the full post-implementation sample. This sample best represents the preferences and opinions about EBT of all EBT-participating retailers across the state.

System Preference

We asked retailers whether they preferred the EBT system, the food stamp coupon system, or had no preference with regard to how food stamp benefits were issued. As is clear from Exhibit 4.1, Maryland food retailers decisively preferred EBT as a food stamp issuance system: 79 percent favor the new EBT system, while only 10 percent reported that they prefer coupon issuance (11 percent reported no preference).

Exhibit 4.1 also shows that support for EBT was strong across all four types of stores. Preference for EBT was extremely high in supermarkets (99 percent); it was also high among grocery stores (66 percent), convenience stores (86 percent), and other stores (73 percent). In results not shown here, we also found that support for EBT was generally positive across Maryland food retailers grouped by redemption levels.

We also asked retailers open-ended questions on what they perceived as the greatest benefits and drawbacks of EBT. As shown in Exhibit 4.2, the most common perceived benefit of EBT was "easier handling" (26 percent of all retailers). Many retailers also cited increased

EXHIBIT 4.1

RETAILER SYSTEM PREFERENCES

	All Stores	Store Type			
		Super-markets	Grocery Stores	Convenience Stores	Other Stores
Percent of retailers who prefer EBT	79.1%	98.8%	65.9%	86.2%	72.8%
Percent of retailers who prefer the paper system	9.9	1.3	10.5	9.4	19.2
Percent of retailers with no preference	10.9	0.0	23.6	4.4	8.0
Sample size	170	31	34	39	66

Source: Post-implementation retailer survey.

sales (25 percent), less fraud (20 percent), easier deposit procedures (16 percent), faster transactions (11 percent), elimination of cash change (9 percent), and savings in labor time (12 percent).

The distribution of these perceived benefits was mostly similar across the four store types, although an unusually large fraction of grocery stores believed that EBT made deposits easier and saved labor time. In addition, a relatively large fraction of convenience stores thought their sales increased under EBT. Most differences in reported benefits across store type are minor, however, and most, if not all, may simply reflect chance variation across small subsamples.

These perceived benefits are somewhat consistent with the impact analyses presented in subsequent sections. Perceptions of easier handling and savings in labor time are consistent with our finding of statistically significant reductions in handling costs under EBT. On the other hand, perceptions of "faster transactions" are not consistent with an estimated overall increase in checkout times under EBT. Of course, a specific subgroup of stores may correctly perceive effects of EBT which do not persist across most stores.

A range of problems with EBT equipment dominated retailers' lists of perceived drawbacks, although other concerns also were mentioned. The most commonly reported drawback was "system too slow" (27 percent), followed by "equipment problems" (18 percent).

Table of Contents

EXHIBIT 4.2

REASONS FOR SYSTEM PREFERENCE

	All Stores	Store Type			
		Super-markets	Grocery Stores	Convenience Stores	Other Stores
Major benefits of EBT					
Easier handling	26.1%	25.5	25.8	17.6	41.2
Increases sales	24.9	30.8	11.2	39.6	22.1
Less fraud	19.9	23.9	19.8	21.0	6.1
Easier deposits	15.9	7.6	30.6	5.1	13.2
Saves labor time	11.5	2.2	25.8	2.4	7.7
Faster transactions	10.7	10.8	12.9	10.6	13.0
No cash change	8.6	7.9	11.6	6.7	6.5
No benefits cited	8.9	1.8	9.4	9.3	15.3
Major drawbacks of EBT					
System too slow	26.9	10.6	25.9	40.5	24.5
Equipment problems	17.9	40.0	5.2	15.5	22.8
Customer confusion	9.0	8.5	17.2	3.4	2.2
More fraud	4.0	2.8	7.7	1.8	1.6
Takes too long to be credited	2.3	0.0	2.5	1.5	5.9
No drawbacks cited	31.9	9.0	50.2	20.8	38.4
Sample size	170	31	34	39	66

Note: Retailers were allowed to cite more than one reason for preferring a system. This table does not report some benefits and drawbacks reported by only a few retailers.

Source: Post-implementation retailer survey.

About 4 percent of Maryland retailers said that EBT increases fraud (though many more felt EBT reduces fraud), and about 9 percent felt that EBT confuses customers. Only 2 percent of Maryland retailers felt that the EBT system takes "too long to credit deposits,"[6] a finding consistent with our cost analysis, which showed that float (interest) costs fell slightly under EBT (indicating that the retailers received credit for food stamp sales faster under EBT than with coupons).

Again, these perceived benefits differed somewhat across store types, possibly by chance alone. Convenience stores were most likely to report that the system was too slow;

6. Of course, even if EBT speeds up the crediting of sales, retailers may still believe that the crediting does not occur as quickly as it "should."

grocery stores were most likely to claim that the EBT system created confusion among customers; supermarkets were most likely to report equipment problems, and grocery stores were least likely to report equipment problems.

Perceived Effects of EBT on Specific Store Operations

Retailers were asked to assess the impact of the demonstration EBT system on four areas of store operations that could affect a store's financial success, and also on fraud within the Food Stamp Program. These opinions are summarized in Exhibit 4.3.

EXHIBIT 4.3

PERCEIVED EBT EFFECTS ON STORE OPERATIONS

Area of Store Operations	Perceived Effect of EBT	All Stores	Store Type			
			Supermarkets	Grocery Stores	Convenience Stores	Other Stores
Checkout counter productivity	Improved	13.3%	15.4%	15.7%	5.4%	19.3%
	Declined	18.9	30.9	7.5	28.6	13.3
	No change	65.7	53.8	72.4	66.1	64.7
Store operating costs	Lower	9.5	4.3	18.6	0.0	12.5
	Higher	12.7	17.7	2.3	28.4	2.7
	No change	75.5	75.8	76.8	70.0	81.3
Total sales	Lower	6.1	1.4	7.8	1.0	16.1
	Higher	18.4	2.6	26.3	22.4	13.3
	No change	73.6	96.0	65.1	76.7	61.3
Store profits	Increase	21.1	3.3	30.5	21.8	10.3
	Decrease	6.7	1.4	11.9	31.1	14.8
	No change	70.1	95.3	56.0	77.3	59.2
Food stamp fraud	Increase	0.6	2.7	0.0	0.0	0.6
	Decrease	50.9	64.2	45.6	51.4	46.3
	No change	44.8	33.1	52.8	40.3	48.7
Sample size		170	31	34	39	66

Note: Totals do not sum to 100 percent. The omitted category is "don't know."

Source: Post-implementation retailer survey.

Most retailers perceived no decisive effect on checkout counter productivity, store operating costs, total sales, or store profits. The remaining retailers gave mixed assessments of EBT. More retailers felt that checkout counter productivity fell rather than rose under EBT (19

percent versus 13 percent); and that operating costs rose rather than fell under EBT (13 percent versus 10 percent). On the other hand, more felt that sales rose rather than fell (18 percent versus 6 percent); and more believed that profits rose rather than fell (21 percent versus 7 percent).

Perceived impacts of EBT on these four categories of store operations varies somewhat across store types, but often in ways not consistent with our empirical findings. Supermarkets and convenience stores were more likely to report that operating costs rose rather than fell under EBT; grocery stores and other stores reported the opposite. Our analysis revealed no significant changes, but the direction of the estimated changes ran counter to perceptions. Grocery stores and other stores were more likely to report that checkout counter productivity increased under EBT; we found instead that checkout times increased rather than decreased for all groups of retailers. Grocery stores and supermarkets were more likely to report that profits rose under EBT, while convenience stores and other stores were more likely to report that profits fell. Although we have no empirical findings about profits, estimated costs did not change in a way consistent with most of these findings.

On the other hand, retailers' perceptions about the effect of EBT on food stamp fraud are somewhat firmer. Over half the sample felt that fraud decreased under EBT, while less than 1 percent believed fraud had increased. Supermarkets were most likely to report that fraud had decreased (64 percent).

With most retailers perceiving no impact of EBT on store operating costs, sales or profits, the widespread preference for EBT is even more interesting. One possible explanation is that retailers place considerable weight on the system's perceived ability to reduce food stamp fraud. Indeed, 96 percent of those retailers who believed that EBT reduces fraud preferred EBT over paper issuance, versus 62 percent of those who perceived no EBT impact on fraud. It is also possible that retailers prefer EBT because they dislike handling food stamp coupons; "easier handling" was the major benefit most often attributed to EBT. Another possibility is that retailers view EBT as a convenient means of adopting a new payment technology that can be extended to commercial credit and debit card operations. Indeed, about 23 percent of the 170 retailers in the post-implementation sample now participate in a commercial network; 13 percent contracted with the system vendor to electronically process commercial transaction through the deployed EBT terminals. In addition, another 5 percent of the sample cited plans to join a

commercial payment network in the future. Preference for EBT was somewhat higher for those retailers participating in a commercial network (86 percent preferred EBT) than for those who were not (74 percent preferred EBT).

Problems with the EBT System

We also asked retailers to describe the problems they experienced under EBT. As noted above, retailers felt the new system is not without problems, especially equipment problems. Episodic problems with the EBT system interrupt retailers' sales and may more than offset savings in processing time achieved when the EBT system functions properly.

EXHIBIT 4.4

EBT SYSTEM PROBLEMS

	All Stores	Store Type			
		Super-markets	Grocery Stores	Convenience Stores	Other Stores
Percent of retailers claiming the system was down at least once during the previous three months	40.8%	57.4%	32.2%	44.6%	37.5%
Percent claiming "the EBT system's transaction speed is not fast enough"	24.4	58.3	11.5	18.8	22.0
Percent having problems with EBT store equipment in the last three months	30.6	47.5	40.3	11.4	23.7
Percent having other problems with EBT in the last three months	28.3	43.4	6.1	36.5	41.0
Sample size	170	31	34	39	66

Source: Post-implementation retailer survey.

As Exhibit 4.4 shows, nearly 41 percent of retailers reported at least one experience in which the EBT system was "down" during the three months prior to the post-implementation

survey. When the system is down, the EBT system computer or the telephone lines no longer function, and retailers cannot conduct electronic sales. The majority of supermarkets (57 percent) experienced downtime; 45 percent of convenience stores, 38 percent of other stores, and 32 percent of grocery stores also reported downtime. These results are consistent with retailers' perceptions about EBT's drawbacks.

While most retailers believed that the speed with which the system normally processed transactions was fast enough, about 24 percent claimed that the EBT system was too slow. Respondents from supermarkets were most likely to voice concerns about system speed (58 percent), followed by other stores (22 percent), convenience stores (19 percent), and grocery stores (12 percent).[7]

About 31 percent of retailers reported having problems with EBT store equipment—as opposed to problems with the EBT system in general—over the previous three months. These problems were more common in larger stores: supermarkets were most likely to report equipment problems (48 percent), followed by grocery stores (40 percent), other stores (24 percent), and convenience stores (11 percent). Because larger stores have more checkout lanes and therefore more equipment, one would expect them to incur more equipment problems. Most retailers responded to the problems by calling the system vendor for assistance. Deluxe usually sent someone directly to the store to fix the problem, and the vast majority of retailers99 with reported problems were satisfied with the service.

Over 28 percent of retailers reported having other problems with the EBT system. These problems included unreadable EBT cards and general questions about using EBT equipment and conducting transactions. Once again, supermarkets were most likely to report these problems. Again, almost all retailers were satisfied with the assistance they received.

7. Some of this concern about slow speeds may reflect problems with commercial transactions initiated at the EBT terminals. Deluxe Data Systems reports that commercial transactions often take longer to complete than EBT transactions. Among the 41 stores an our sample doing commercial debit or credit transactions, 30 percent claimed that the EBT system's transaction speeds were not fast enough, versus 20 percent of stores not doing commercial activity. The disparity among supermarkets was even greater, 62 percent versus 37 percent.

Retailers' Perceptions of Food Stamp Fraud under EBT

The results presented so far show that retailers generally believe that fraud will decline under EBT. We asked retailers whether several categories of fraud were relatively more or less common under EBT; their responses are summarized in Exhibit 4.5.

Retailers consistently felt that a large, diverse range of fraudulent activities are less common under EBT. Over 70 percent of retailers believed that recipients are more likely to sell benefits to someone other than food retailers under the paper system than EBT. Only 5 percent felt this practice was more common under the EBT system. Similarly, about 56 percent of retailers believed that, under the paper system, unauthorized persons are more likely to purchase store items with someone else's food stamp benefits. Only 8 percent felt this practice was more common under the EBT system.

The number of retailers who felt other forms of fraud were more common under the paper system consistently exceeded those who felt that these forms are more common under EBT. These forms of fraud were the purchase of ineligible items with food stamp benefits, the resale of purchases made with food stamp benefits for cash, the return to the retailer of items purchased with food stamp benefits for cash refunds, the sale of food stamp benefits to store employees, and employees' overcharging those paying with benefits and discouraging customers from paying with these benefits. With only a few exceptions, these perceptions of reduced fraud under EBT persisted across respondents from all four store types.

4.3 Checkout Productivity Costs

Retailers bear additional costs in order to participate in the Food Stamp Program, among them the fact that paying for groceries with food stamp benefits involves different procedures than paying with cash. Previous studies have shown that it takes cashiers longer to process a food stamp transaction than it does to process a similar cash transaction, and that among food stamp transactions, it takes longer to process an EBT transaction than to process a coupon transaction.[8]

8. See John A. Kirlin *et al.*, *The Impacts of the State-Operated Electronic Benefit Transfer System in Reading, Pennsylvania.* Cambridge, MA: Abt Associates Inc., February 1990; and John A. Kirlin *et al.*, *The Impacts of the State-Initiated EBT Demonstrations on the Food Stamp Program.* Cambridge, MA: Abt Associates Inc., June 1993.

Table of Contents

EXHIBIT 4.5

RETAILERS' PERCEPTIONS OF FOOD STAMP FRAUD AND ABUSE

Type of Fraud	More Common Under...	All Stores	Store Type			
			Super-markets	Grocery Stores	Convenience Stores	Other Stores
Recipient sells benefits to someone other than a food retailer	EBT	6.4%	6.6%	9.2	3.5%	5.5%
	Paper	70.4	80.7	72.7	63.5	65.6
	Same	7.1	3.1	5.0	7.9	14.5
Recipient buys ineligible items in the store with food stamp benefits	EBT	10.9	1.1	3.9	26.7	10.4
	Paper	27.7	36.4	39.7	11.7	19.8
	Same	43.3	33.1	41.5	55.8	37.8
Recipient resells purchases made with food stamps for cash	EBT	3.7	1.0	3.9	3.7	6.3
	Paper	27.0	20.0	31.3	29.4	22.6
	Same	32.0	45.8	29.0	32.5	22.0
Recipient returns items bought with food stamps to store for cash	EBT	3.4	2.3	3.9	0.0	9.1
	Paper	29.8	35.9	32.0	29.6	18.9
	Same	34.0	43.4	15.8	54.8	27.1
Unauthorized persons try to purchase store items with food stamps	EBT	8.0	4.0	0.0	20.5	8.1
	Paper	55.5	79.6	57.8	47.2	37.7
	Same	23.1	10.9	29.5	25.4	20.0
Recipients sells food stamps to store employees	EBT	1.8	1.7	0.0	2.5	4.3
	Paper	38.2	45.6	31.3	49.3	25.8
	Same	14.0	18.5	15.7	11.3	10.2
Employees overcharge or discourage payment with food stamps	EBT	6.1	0.0	0.0	20.5	1.6
	Coupons	19.6	20.1	29.4	5.4	22.1
	Same	16.5	33.0	3.9	20.8	16.9
Sample size		170	31	34	39	66

Source: Post-implementation retailer survey.

Food purchases made using cash are clearly the simplest to process: at the end of the transaction the customer simply hands the cashier the cash, and the cashier gives the receipt and any change to the customer. Purchases made using food stamp coupons are slightly more complicated: the customer hands over the appropriate amount in food stamp coupons to purchase the eligible items.[9] Several sources of additional processing time may arise in this case. Coupons must be torn from the coupon book. If any loose $5 or $10 coupons are presented to the cashier, the cashier is supposed to match the coupon serial numbers against the coupon book from which they were torn (to ensure that the recipient is the valid holder of the coupons). Cashiers may also request to see the customer's program identification card. Finally, the transaction may take longer if cash or some other payment form (such as a check) is also used to pay for a portion of the purchase (as when non-eligible items are being purchased).

The EBT system is significantly more complicated than either of these payment procedures. First, the recipient must tell the cashier that he or she will be using the EBT card for payment, using his or her food stamp account.[10] The cashier then presses a "food stamp" function key on the terminal. The recipient then swipes his or her card through the terminal's card reader, and the cashier enters the dollar amount of the food stamp portion of the purchase. The recipient then enters his or her four-digit PIN on a PIN-pad attached to the terminal. The cashier then presses a "send" or "enter" key on the terminal, and the message is forwarded to the EBT system's central computer. If the purchase amount does not exceed the client's current food stamp account balance, the central computer sends back an authorization message to the terminal, debits the recipient's account by the purchase amount, and credits the store's EBT account by that amount. These typical procedures require additional processing time compared to purchases using cash or food stamp coupons, and problems such as card reswipes and forgotten PINs can add even more time to food stamp EBT purchases.

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9. The introduction of an EBT system does not change program regulations regarding which items can be purchased with program benefits. Benefits cannot be used to purchase non-food items or food items that have been prepared in the store.

10. In the Maryland system, cash assistance recipients can access cash benefits to pay for groceries. Some stores also perform cash-back EBT transactions. Unless food stamp benefits were used to pay for part of the purchase, transactions involving cash assistance EBT have been excluded from these analyses. Only a few such transactions were observed.

Given these procedural changes, the main question to be answered in this section is: What is the additional checkout productivity cost associated with processing food stamp EBT transactions, compared to food stamp coupon transactions, within the Maryland system?

Methodology[11]

Almost 12,000 purchase transactions were recorded by trained observers in supermarkets, grocery stores, and convenience stores in Maryland for the purpose of this

occurred in March through June 1992, and the post-implementation round occurred in June through September 1993.[12] During each round, the observers spent one person-day in each of 45 stores (15 supermarkets, 15 grocery stores, and 15 convenience stores). The observers used stopwatches to record the transaction times, and also recorded any time-consuming events that

- Based on this estimate, the cost per $1,000 food stamp benefits redeemed was calculated. This cost was discounted based on the prevalence of unproductive cashier time observed between transactions.

- The costs associated with handling EBT transaction and food stamp coupon transactions were compared, in full and discounted form.

The difference between the costs associated with processing food stamp coupon and EBT transactions provides an estimate of the impact of the EBT system on retailers' checkout costs per $1,000 of food stamp benefits redeemed. All of the analyses presented in this section are performed separately for supermarkets, grocery stores, and convenience stores. Average EBT and food stamp coupon impacts across all store types also are presented, with the assumption that impacts within other stores are similar to those within convenience stores.

Estimated Checkout Costs

The analysis begins by estimating the average time required to conduct a "typical" food stamp EBT transaction. This time is then compared to the predicted average time of the same transaction if cash or food stamp coupons had been used as payment.

Average Time for a Typical Purchase. Regression analysis was used to estimate how much longer food stamp coupon and food stamp EBT transactions take to process, compared to cash (see Appendix F for model specifications and results). Regression analysis is best suited for these analyses, because the goal is to separate out the time associated with the type of payment from other factors that could influence the amount of time it takes to complete a transaction, such as ringing errors or price checks.

Based on the regression results, Exhibit 4.6 presents the predicted time for a typical food stamp EBT transaction when treated as a food stamp EBT, food stamp coupon, or cash transaction.[13] Across all store types, the typical EBT transaction took 151.10 seconds. The predicted time if food stamp coupons had been used is 133.09 seconds, and the predicted time for cash is 105.86 seconds. Therefore, an average purchase using food stamp coupons took 27.23 seconds longer to complete than an average cash purchase; an EBT transaction took 45.24 seconds longer than cash; and an EBT transaction, 18.01 seconds longer than one using food

13. The procedure for predicting transaction times, which is described in Appendix F, holds transaction characteristics (like number of items purchased) constant so that only payment type affects the predicted value.

stamp coupons. The difference between EBT and coupons was largest among grocery stores (39.10 seconds), followed by convenience stores (19.54 seconds) and supermarkets (12.25 seconds).

EXHIBIT 4.6

TOTAL PREDICTED TIME FOR SIMILAR FOOD STAMP EBT, COUPON, AND CASH TRANSACTIONS
(seconds per transaction)

		Store Type		
Payment Type	All Stores[a]	Supermarkets	Grocery Stores	Convenience Stores
EBT transaction	151.10	189.58	140.96	70.74
Cash transaction	105.86	141.56	89.69	34.95
Difference	45.24**	48.02**	51.27**	35.79**
FS coupon transaction	133.09	177.33	101.86	51.20
Cash transaction	105.86	141.56	89.69	34.95
Difference	27.23**	35.77**	12.17**	16.25**
EBT transaction	151.10	189.58	140.96	70.74
FS coupon transaction	133.09	177.33	101.86	51.20
Difference	18.01**	12.25**	39.10**	19.54**

Notes: [a] Predicted times based on weighted average of times for supermarkets, grocery stores and convenience stores, plus imputed value for other stores. See Appendix F for details on weighting procedure.

** Statistically significant at the 1 percent level.
* Statistically significant at the 5 percent level.
† Statistically significant at the 10 percent level.

Source: Pre-implementation and post-implementation checkout observation surveys.

Average Incremental Cost per Transaction. The average incremental cost per transaction was estimated by multiplying the additional (or incremental) time required to process a food stamp coupon or food stamp EBT transaction (compared to cash) by the average hourly wage of cashiers,[14] and dividing that amount by 3,600 (the number of seconds in an hour). The results of these calculations are presented in Exhibit 4.7. The average incremental cost per

14. The average hourly cashier wages are calculated using responses to the retailer post-implementation survey. These wages include fringe benefits.

transaction of processing EBT transactions is about 50 percent higher than that of food stamp coupons: the incremental cost is 9.5 cents for EBT, compared to 6.1 cents for coupons.

EXHIBIT 4.7

AVERAGE INCREMENTAL COST PER TRANSACTION

		Store Type		
	All Stores	Supermarkets	Grocery Stores	Convenience Stores
Food Stamp EBT Transactions				
EBT-cash time difference (Seconds)	45.24	48.02	51.27	35.79
Average hourly wage	$7.43	$8.76	$5.66	$5.41
Average cost per transaction[a]	$0.095	$0.117	$0.081	$0.054
Food Stamp Coupon Transactions				
Coupon-cash time difference (Seconds)	27.23	35.77	12.17	16.25
Average hourly wage	$7.43	$8.76	$5.66	$5.41
Average cost per transaction[a]	$0.061	$0.087	$0.019	$0.024

Note: [a] Average cost per transaction equals the time difference (in seconds) multiplied by the cashier's hourly wage, divided by 3,600 (the number of seconds in an hour).

The cost of processing both food stamp coupon and EBT transactions was highest in supermarkets, where wages are higher than in grocery stores and convenience stores. Among grocery stores, the average incremental cost of handling an EBT transaction is four times that of a food stamp coupon transaction (8.1 cents versus 1.9 cents). The difference in incremental cost for convenience stores and supermarkets is exactly three cents (5.4 cents versus 2.4 cents, and 11.7 cents versus 8.7 cents, respectively).

Costs per $1,000 of Food Stamp Benefits Redeemed. The average observed food stamp purchase amount was $20.94 across all three store types (see Exhibit 4.8).[15] This average was highest in grocery stores ($28.59), followed closely by supermarkets ($25.74), and at a distance by convenience stores ($6.71). The number of transactions per $1,000 of benefits

15. This average is calculated across all food stamp coupon and EBT transactions observed, where no other payment form was used.

redeemed is computed by dividing $1,000 by the average food stamp purchase amount. The implication of this calculation for convenience stores is clear: because the average food stamp purchase amount is so much lower in convenience stores than in grocery stores and supermarkets, convenience stores must conduct a much greater number of transactions to redeem $1,000 in benefits (149.03 transactions, compared to 34.98 for grocery stores and 38.85 supermarkets). This factor drives up the cost of participation in the Food Stamp Program for convenience stores (when measured in terms of $1,000 of redemptions), regardless of whether customers use coupons or the EBT system.

EXHIBIT 4.8

INCREMENTAL CHECKOUT COSTS UNDER COUPON AND EBT SYSTEMS

		Store Type		
	All Stores[a]	Supermarkets	Grocery Stores	Convenience Stores
Average food stamp purchase amount	$20.94	$25.74	$28.59	$6.71
Transactions per $1,000 of benefits redeemed	47.75	38.85	34.98	149.03
Average cost per food stamp EBT transaction	$0.095	$0.117	$0.081	$0.054
Average cost per food stamp coupon transaction	$0.061	$0.087	$0.019	$0.024
Incremental cost per $1,000 of EBT benefits redeemed	$4.53	$4.54	$2.82	$8.02
Incremental cost per $1,000 of food stamp coupon benefits redeemed	$2.90	$3.38	$0.67	$3.64
EBT costs minus coupon costs	**$1.63****	**$1.16****	**$2.15****	**$4.38****

Notes:
[a] Average food stamp purchase amount and average cost per food stamp transaction are weighted averages of the store type figures. The number of transactions required to redeem $1,000 in benefits and the costs associated with these transactions are calculated directly.
** Statistically significant at the 1 percent level.
* Statistically significant at the 5 percent level.
† Statistically significant at the 10 percent level.

In the next stage of the analysis, the average incremental cost per food stamp EBT and food stamp coupon transaction is multiplied by the number of transactions per $1,000 of benefits

redeemed, to get the incremental cost per $1,000 of food stamp benefits redeemed. Across all store types, accepting EBT as payment instead of food stamp coupons is associated with an additional cost of $1.63 per $1,000 of food stamp redemptions. This incremental cost is highest in convenience stores ($4.38) which, as noted above, need to process many more transactions to redeem $1,000 in food stamp benefits.

Discounted Costs per $1,000 of Food Stamp Benefits Redeemed. The cost impacts presented above are attributable only to the incremental time needed to process EBT and food stamp transactions, compared to cash. However, during slow periods the cashier may have time between customers. That time may be used productively to stock items or total up receipts, or it may be unproductive time when the cashier simply waits for the next customer. Although it is unclear whether or not the "wait" time between customers is unproductive time, we have taken this possibility into consideration in our analyses by multiplying the percentage of food stamp transactions with a wait time of 20 seconds or less and the cost estimates presented above.[16] That is, we view the extra transaction time as a "cost" only if the cashier is relatively busy, as evidenced by a short interval before the next transaction. Applying this factor decreases the overall estimate of incremental checkout costs from $1.63 to $0.97 per $1,000 of food stamp benefits redeemed (see Exhibit 4.9).

Estimated Final Impacts of the EBT System on Retailers' Checkout Costs. Both the full and reduced checkout cost impacts are presented in Exhibit 4.9. The last rows of this exhibit present the impact of the EBT system on retailers' checkout costs per $1,000 of food stamp benefits redeemed, compared to the food stamp coupon system. Regardless of which estimate is used, the cost of participation in the EBT system is highest for convenience stores ($1.52 to $4.38), followed by grocery stores ($1.20 to $2.15) and supermarkets ($0.88 to $1.16). Depending on whether the full or reduced final cost estimate is used, the overall additional cost of using the EBT system instead of the food stamp coupon system is between $0.97 and $1.63 per $1,000 of benefits redeemed. These costs are comparable to those reported for the state-initiated EBT demonstrations in New Mexico and in Ramsey County, Minnesota.

16. The 20-second cut-off has been used in previous analyses of EBT system impacts on checkout productivity. A delay of less than 20 seconds between customers leaves very little unproductive time. The percentage of transactions with a wait time of 20 seconds or less is presented in Appendix F, by store type and for all stores combined.

Table of Contents

EXHIBIT 4.9

INCREMENTAL CHECKOUT COSTS: FULL AND DISCOUNTED COST APPROACHES

	All Stores	Store Type		
		Super-markets	Grocery Stores	Convenience Stores
Incremental cost per $1,000 of EBT benefits redeemed				
Full cost	$4.53	$4.54	$2.82	$8.02
Discounted cost	2.87	3.36	1.57	3.49
Incremental cost per $1,000 of coupon benefits redeemed				
Full cost	2.90	3.38	0.67	3.64
Discounted cost	1.90	2.48	0.37	1.97
EBT costs minus coupon costs				
Full cost	1.63	1.16	2.15	4.38
Discounted cost	0.97	0.88	1.20	1.52

There the additional cost ranged from $1.67 to $1.84 per $1,000 of food stamp benefits redeemed.[17]

4.4 HANDLING AND RECONCILIATION COSTS

Handling and reconciliation activities consist of the procedures retailers conduct to receive monetary credit for food stamp sales. These activities include bookkeeping or accounting efforts to reconcile sales with bank credits for food stamp deposits. This section presents the estimated costs of retailers' handling and reconciliation activities under the EBT and coupon systems.

Handling and Reconciliation Activities

Activities Under the Paper System. The processing of paper food stamp coupons requires several steps. To redeem food stamp coupons for credit, food retailers must first endorse the coupons with a stamp that identifies the store. Retailers must also count the coupons

17. See Kirlin *et al.*, *Impacts of the State-Initiated EBT Demonstrations.*

and complete a Redemption Certificate for each deposit. The Redemption Certificate, which proves that the store is authorized to accept coupons, is provided by FNS to all authorized stores. Most retailers also try to reconcile sales with bank credits for food stamp deposits.

Some banks place additional restrictions on food stamp coupon deposits. For example, banks may require retailers to separate coupons by denomination and to strap the coupons in 100-piece bundles of like denominations. Restrictions on food stamp coupon deposits are matters of individual bank policy and are not subject to federal regulation (other than regulations that prevent banks from charging retailers for food stamp coupon deposits that are properly strapped and bundled).

EBT Activities. The EBT system initiates an overnight crediting process, or "system settlement," at the end of the processing day. During system settlement, the EBT system totals each retailer's EBT activity since the previous settlement and initiates a process by which credits are transferred electronically to a bank account specified by the retailer.

Store terminals print out a daily EBT activity report, or retailers can request the report at any time by pressing a special terminal function key. This report summarizes total EBT activity since the last settlement by type of EBT payment for the terminal and for the entire store. Retailers can access information about individual EBT transactions by retaining the merchant copy of EBT transaction receipts, and also can call project staff to learn more detailed information about EBT activity at their store.

EBT handling activities consist of reconciling the various sources of EBT activity information with the store's internal accounting system, and of reconciling EBT reports of EBT transactions with account statements from their banks. If a store processed any voucher transactions, these transactions must be reconciled as well, and the voucher must be submitted to the system processor to validate the transaction.[18]

18. If the system is down or running so slowly that electronic authorization cannot be received, or if terminal problems preclude electronic authorization, retailers are supposed to call the Deluxe Help Desk to obtain verbal authorization for an EBT sale. Information about the sale is written onto a paper voucher, which must be submitted to Deluxe before credit for the sale can be received.

Methodology

Handling and reconciliation costs are estimated as the labor expense associated with the various activities described above. Respondents to the retailer survey were asked to describe the handling and reconciliation procedures used in their store, as well as the amount of time and type of employee associated with each procedure. Respondents also provided wage information for employees involved in the handling process, and this information was used to compute a total monthly store cost.

Handling costs are thus defined as the product of amount of time (in hours) that employees spend performing handling activities, and employees' hourly wages. The impact of the EBT system on the cost of handling activities, therefore, is the increase or decrease in handling costs under the EBT system, relative to the coupon system.

As noted at the beginning of this chapter, most estimates of EBT costs are calculated as the costs associated with dealing with the EBT system divided by the ***sum*** of food stamp and cash assistance redemptions. This approach is taken because it would have been very difficult, if not impossible, for retailers to separately identify costs associated with food stamp and cash assistance EBT activity. We believe that, overall, the standardized cost of accepting food stamp EBT transactions is similar to the standardized cost of accepting cash assistance transactions. Even if this assumption is incorrect, our interpretation of the estimated EBT impacts as food stamp impacts is reasonable. For the vast majority of stores, food stamp redemptions far exceed cash assistance redemptions, so the final impact of EBT is largely determined by its impact on food stamp processing costs.

Estimated Handling and Reconciliation Costs

As shown in Exhibit 4.10, average handling times declined for all types of retailers under the EBT system. Under the food stamp coupon system, retailers spent an average of 0.74 hours handling every $1,000 of redemptions. Under the EBT system, retailers spent an average of 0.37 hours handling every $1,000 of redemptions. The store-by-store average difference in these times, 0.38 hours, is statistically significant at the 1 percent level. The reduction in handling time, in turn, led to a reduction in the labor cost of handling these redemptions. Under the paper system, this standardized cost was $7.73; under the EBT system, this standardized cost fell to $3.65, a statistically significant reduction of $4.08.

EXHIBIT 4.10

HANDLING AND RECONCILIATION COSTS UNDER COUPON AND EBT SYSTEMS

			Store Type			
		All Stores	Super-markets	Grocery Stores	Convenience Stores	Other Stores
Average handling time, hours per $1,000 of benefits redeemed	EBT	0.37	0.31	0.21	3.32	1.56
	Coupons	0.74	0.65	0.59	4.14	2.20
	Difference	**-0.38****	**-0.34****	**-0.38****	**-0.82**	**-0.65**
Average standardized cost, dollars per $1,000 of benefits redeemed	EBT	$3.65	$4.11	$1.47	$26.14	$11.88
	Coupons	7.73	9.11	4.58	28.41	15.75
	Difference	**-$4.08****	**-$5.00****	**-$3.11****	**-$2.28**	**-$3.87**
Average hourly wage		$10.68	$14.19	$6.98	$9.42	$10.28
Average monthly food stamp and cash assistance redemptions, EBT		$15,077	$45,831	$16,119	$1,242	$2,200
Average monthly food stamp redemptions, coupons		$12,781	$37,667	$14,280	$895	$2,047
Sample size		150	24	31	34	61

Note: ** Statistically significant at the 1 percent level.
* Statistically significant at the 5 percent level.
† Statistically significant at the 10 percent level.

Source: Pre/post retailer survey.

The average hourly wage of employees performing handling tasks was $10.68. This average reflects the wages of many types of employees, from minimum-wage clerks to store managers in large supermarkets.[19]

19. We present average wages simply to provide the reader with a general sense of the hourly cost of relevant employees in the sample. To obtain estimates of handling costs from handling times, one cannot simply multiply average wages by average times. The average cost figures were obtained by multiplying reported wages from each survey by reported times for each of several steps each retailer reported. These costs were then summed to yield total costs within each store; these total costs were then averaged, using weights, to obtain the figures in the exhibit.

Handling times and handling costs declined significantly for the two types of stores with the largest monthly redemption levels—supermarkets and grocery stores. Under EBT, standardized handling time for supermarkets declined by 0.34 hours, and standardized handling costs declined by $5.00. Standardized handling time for grocery stores declined by 0.38 hours, and standardized handling costs declined by $3.11. EBT caused relatively larger cost reductions among supermarkets, but similar reductions in handling time, because supermarkets tended to use more highly paid employees to perform handling tasks. Average EBT handling costs, standardized in terms of $1,000 in redemptions, also were lowest for these two types of stores—$4.11 for supermarkets and $1.47 for grocery stores.

Handling times and handling costs also declined for the two types of stores with the smallest monthly redemption levels—convenience stores and other stores. Under EBT, standardized handling time for convenience stores declined by 0.82 hours, and standardized handling costs declined by $2.28. Standardized handling time for other stores declined by 0.65 hours, and standardized handling costs declined by $3.87. However, none of these changes is statistically significant. Average EBT handling costs were highest for these two groups of stores—$11.88 per 1,000 for other stores, and $26.14 per 1,000 for convenience stores.

The finding of larger standardized costs for the two store types with the lowest redemptions, and of smaller standardized costs for the two store types with the largest redemptions, suggests the presence of some scale economies for these handling tasks. Handling and reconciliation under either system requires a base level of effort, regardless of the volume of redemptions that is reconciled. As redemption volume increases, this base level of effort appears to increase at a rate lower than the rate of increase in redemptions. As a result, standardized handling times fall.

This explanation of differences in handling effort is supported by the presence of reconciliation activities that are independent of the volume of benefits redeemed. Under a paper coupon system, for example, each retailer must complete a Redemption Certificate for each coupon deposit (typically on a daily basis), regardless of the size of the deposit. In an EBT environment, the system provides retailers with daily reconciliation information at the terminal level, regardless of the level of EBT activity processed.

Table of Contents

4.5 Store Training Costs

Food retailers must train checkout clerks (or other employees who transact sales) on procedures for completing a food stamp sale. Part of this training involves program regulations on the use of food stamp benefits, such as which items can be purchased under the Food Stamp Program and how to establish the identity of a recipient. Training for the EBT system must also cover how to complete food stamp (and cash assistance) transactions.

This section presents a comparison of the estimated costs of training employees on food stamp coupon procedures under the paper system with the estimated costs of training employees to accept either food stamp or cash assistance payments under EBT. The pre-implementation survey asked retailers detailed questions about the time taken to train staff to process food stamp coupon purchases, not cash assistance transactions. Our post-implementation survey asked questions about the time taken to train new clerks on processing Independence card (EBT) food stamp and cash assistance purchases together. However, we suspect that training under EBT would be similar for just food stamp transactions alone—once a clerk learns about food stamps purchases under EBT, virtually no other training is required to learn about cash assistance purchase or cash-back transactions under EBT. Consequently, we believe that the training time reported for EBT use in general is similar to training needed to process EBT-based food stamp purchases alone.

Training Store Personnel

Food Stamp Coupon Activities. Merchants must train newly hired checkout clerks on the special rules and procedures that apply to food stamp transactions. Many stores provide clerks with a pamphlet prepared by FNS that outlines relevant Food Stamp Program regulations, particularly those describing items that are eligible for food stamp purchase. Handling food stamp coupon transactions involves many other special procedures, however, because food stamp coupons represent a unique payment form. Merchants must instruct clerks not to accept loose coupons denominated larger than one dollar (without a coupon booklet with matching serial numbers), to give loose one dollar coupons for even dollar portions of change, and to avoid discriminating against food stamp customers.

The Compliance branch of FNS monitors store conformance with program regulations. The consequences of inadequately training store checkout clerks can be severe; penalties for non-

compliance with program regulations range from monetary fines to permanent disqualification from program participation.

EBT Activities. Some of the topics relevant to food stamp coupons apply to EBT system training as well. Regardless of which system delivers food stamp benefits, checkout cashiers must know which items are allowable for food stamp purchase, how to verify client identity, and to treat food stamp customers equally with others. Stores must additionally train cashiers on how to complete specific EBT functions, however, including purchase, refund, and voucher transactions and client balance requests.

As described in Section 4.3, clerks in all stores use similar steps to process EBT purchase and refund transactions and provide client balance information. Voucher transactions, however, are more complex and require a supervisor's signature. To complete a voucher transaction, a clerk or supervisor must:

- Telephone for transaction authorization;
- Complete and have the customer sign a paper voucher;
- Give one copy of the form to the customer; and
- Mail a copy of the voucher form to the system processor.

Stores are supposed to telephone for authorization of voucher transactions. They accept some risk if they cannot call or get through, but process the sale anyway. Retailers are guaranteed only partial reimbursement for nonauthorized transactions against accounts that turn out to have insufficient funds;[20] reimbursement for all ***authorized*** voucher transactions is fully guaranteed.

Methodology

Training cost is defined as the labor expense of training newly-hired checkout clerks. Labor expense includes wages plus fringe benefits paid both to the trainer(s) and to the new hire for the time spent training on EBT or food stamp coupon transactions, and on Food Stamp

20. In the merchant contracts, up to $40 per client per day is guaranteed by Deluxe. Deluxe has temporarily raised the guarantee to $100 under certain conditions.

Program regulations. Average monthly store training cost is computed as training cost per hire multiplied by the average number of monthly hires.

About two thirds of retailers reported training costs of zero. A store can have zero training costs if it never or rarely hires a new employee. Stores also can have zero training costs if they choose not to train employees on EBT or coupon processing, either because they process so few food stamp sales or because the owner or store manager handles all EBT or coupon sales. With so many estimates of zero standardized costs, the median (and modal) estimate of ***changes*** in training costs is also zero.

Differences in pre/post estimates of standardized retailer training costs would be misleading if caused by changes in employee turnover rates or changes in redemption levels.[21] Although employee turnover and redemption levels are important factors in overall retailer training costs, these rates are a function of exogenous factors such as local economic conditions. The analysis of training cost changes, therefore, holds constant both the rate of employee turnover and average monthly food stamp redemptions. Each store's EBT training costs are estimated using the number of monthly hires reported in the pre-implementation survey, and each store's training costs are then standardized by the food stamp redemption levels from the time of the pre-implementation survey.[22]

The analysis of training costs under EBT includes only the average monthly cost of training ***new hires***. The post-implementation survey did not collect data on stores' expenses associated with EBT startup training. Such startup expenses become very small when averaged over all benefits redeemed during a store's lifetime of participation in the Food Stamp Program.

21. This is true as long as the introduction of EBT does not change a store's food stamp or total business levels so much that the number of new hires changes in response. There is no evidence that would suggest such an effect.

22. The use of baseline redemption volume as the standardizing factor for both EBT and coupon training cost estimates represents a departure from our treatment of checkout and handling costs. This departure is only for training costs, however, as subsequent cost elements are standardized by the redemption volume that is time-relevant to the EBT or coupon cost element. We make an exception in the case of training costs only because of the independence between redemption volume and training costs, as discussed above.

Estimated Training Costs

Store training costs increase under EBT, but the increase is small, $0.59 per $1,000 of benefits redeemed, and not statistically significant.

As shown in Exhibit 4.11, retailers hired an average of 0.8 new employees per month, with supermarkets doing the bulk of the hiring. The average EBT-related training time per hire was 4.6 hours, compared to an average of 2.4 hours under coupon issuance. When training time is standardized per $1,000 of monthly redemptions, the training time estimates (which include the observations of zero hours of training time) are 7.1 minutes per $1,000 of redemptions under EBT and 4.9 minutes under coupon issuance. The standardized training cost estimates average $1.97 under EBT and $1.38 under coupons.

We present average wages to provide the reader with a general sense of the hourly cost of these trainees. The average hourly wage (including fringe) of new employees during training is $6.46 per hour. The cost of the training times includes this hourly wage plus the wage of supervisors.

Only within the category of other stores did EBT have a statistically significant impact on training costs. There, costs declined by an average of $0.60 per $1,000 of benefits redeemed. The reason is that other store respondents reported that new hires receive, on average, only 0.4 hours of training in how to use the EBT system. This is much lower than any of the other categories of store type.

4.6 RESHELVING COSTS

Food stamp clients cannot always complete a purchase transaction. This circumstance may arise because they overestimate their EBT balance or the value of the paper coupons they are carrying (or underestimate the size of their purchase), or because some component or part of the EBT system is unavailable and the store chooses not to process a voucher transaction. In such situations, customers can use a different payment form, such as cash, or reduce the purchase amount by not buying some of the items. In this section, we examine the time and costs incurred by retailers when employees reshelve items that customers did not purchase.

Table of Contents

EXHIBIT 4.11

TRAINING COSTS UNDER COUPON AND EBT SYSTEMS

			Store Type			
		All Stores	Super-markets	Grocery Stores	Convenience Stores	Other Stores
Average hires per month		0.8	1.3	0.2	0.2	0.2
Average training time per hire, hours	EBT	4.6	2.4	7.6	0.8	0.4
	Coupons	2.4	2.4	2.4	1.0	2.3
Average training time, minutes per $1,000 of benefits redeemed	EBT	7.1	11.4	1.7	20.2	0.9
	Coupons	4.9	7.5	1.2	19.6	4.2
	Difference	**2.2**	**3.9**	**0.5**	**0.6**	**-3.2****
Average standardized cost, dollars per $1,000 of benefits redeemed	EBT	$1.97	$3.27	$0.38	$5.38	$0.19
	Coupons	1.38	2.20	0.23	5.78	0.79
	Difference	**$0.59**	**$1.07**	**$0.15**	**-$0.40**	**-$0.60***
Average hourly wage of new cashiers		$6.43	$7.82	$4.90	$4.96	$4.84
Average monthly food stamp redemptions, coupons		$12,781	$37,667	$14,280	$895	$2,047
Sample size		150	24	31	34	61

Note: ** Statistically significant at the 1 percent level.
* Statistically significant at the 5 percent level.
† Statistically significant at the 10 percent level.

Source: Pre/post retailer survey.

Methodology

Store reshelving costs are estimated as the labor cost of reshelving items brought to the checkout counter but not purchased by clients. Retailers were asked to estimate the amount of time spent each month reshelving items from attempted ***food stamp*** purchases and to provide the wage information for the relevant employees. Monthly store cost equals the product of these two variables, summed over all employees who reshelve items.

We compare paper system reshelving costs from food stamp transactions with reshelving costs from all EBT transactions, which include both food stamp and cash assistance transactions. Thus, the EBT costs are standardized by the sum of food stamp and cash assistance transactions.

Estimated Coupon and EBT Reshelving Costs

Exhibit 4.12 shows that estimates of average standardized reshelving costs increase under EBT. Retailer reshelving costs among all stores, standardized in terms of $1,000 of redemptions, were $1.62 under the coupon system and $2.73 under the EBT system, a statistically insignificant increase of $1.10. The EBT effect is explained by the increased amount of time retailers spend reshelving under the EBT system. Average standardized reshelving time among all retailers increased from 11 minutes under coupons to 22 minutes under EBT. This change, however, was statistically insignificant.

Once again, we found some variation in the effect of EBT across the four store types. Supermarkets experienced small and insignificant increases in standardized reshelving times and costs under EBT. The overall increase in reshelving costs arises mainly from increased costs among grocery stores—their standardized times rose by 24 minutes, and their costs arose by $2.26.

Convenience stores and other stores experienced declines in reshelving costs under EBT. Standardized reshelving costs of convenience stores fell by $2.25, a statistically insignificant change. Reshelving costs for other stores fell by $1.63, again a statistically insignificant change. These declines occurred because reshelving times fell for these stores. It may be that, because convenience stores and other stores process fewer and smaller EBT purchases, they are more likely to avoid the extensive reshelving that occurs when the system occasionally suffers downtime.

4.7 FLOAT COSTS

Float costs measure the foregone revenue from funds that are not earning a rate of return. In the case of paper food stamp coupons, float costs are incurred during the period between the time of a food stamp sale and the time a store's bank account is credited for deposited coupons. Under the coupon system, float time is a function of store deposit frequency—float cost decreases with increases in the frequency of store deposits. Deposit

EXHIBIT 4.12

RESHELVING COSTS UNDER COUPON AND EBT SYSTEMS

			Store Type			
		All Stores	Super-markets	Grocery Stores	Convenience Stores	Other Stores
Average reshelving time, minutes per $1,000 of benefits redeemed	EBT	21.8	19.4	25.7	14.4	8.5
	Coupons	10.5	16.7	2.0	29.3	15.9
	Difference	**11.2**	**2.7**	**23.7**	**-14.9**	**-7.4**
Average standardized cost, dollars per $1,000 of benefits redeemed	EBT	$2.73	$3.07	$2.49	$1.87	$0.73
	Coupons	1.62	2.66	0.23	4.13	2.36
	Difference	**$1.10**	**$0.40**	**$2.26**	**-$2.25**	**-$1.63**
Average hourly wage		$9.09	$10.21	$5.88	$8.17	$7.87
Average monthly food stamp and cash assistance redemptions, EBT		$15,077	$45,831	$16,119	$1,242	$2,200
Average monthly food stamp redemptions, coupons		$12,781	$37,667	$14,280	$895	$2,047
Sample size		150	24	31	34	61

Note: ** Statistically significant at the 1 percent level.
* Statistically significant at the 5 percent level.
† Statistically significant at the 10 percent level.

Source: Prepost retailer survey.

frequency may be a matter of bank requirements as well as stores' cash management preferences. If a store's bank restricts coupon deposits by, for example, requiring a minimum coupon deposit, then stores with relatively small monthly redemptions may have to make fewer monthly coupon deposits while accumulating the minimum number of coupons. Fewer coupon deposits lead to higher coupon float costs.

The concept of float is the same under an EBT system. Under the EBT system, however, all EBT sales are credited to retailer bank accounts through the overnight ACH process, regardless of the volume of EBT sales.[23]

Methodology

We compare paper system float costs from food stamp transactions with float costs from all EBT transactions, which include both food stamp and cash assistance transactions.

Float costs, unlike the other retailer cost components considered thus far, contain no labor element. Float cost is entirely a function of time and interest rate. Float time is measured from the time of a purchase transaction until the transaction amount is credited to the store's bank account. For both EBT and coupon float costs, we assume an annual interest rate of 3.5 percent, the median rate retailers reported in the pre-implementation survey.

Retailers usually receive credit for food stamp coupon sales on the day they deposit the coupons in their bank account (see Chapter Six for banks' crediting procedures). Thus, to determine float in the coupon system, we asked retailers how often they deposit their coupons. We used the reported frequency to calculate the average number of days between sale and deposit (e.g., with weekly deposits, the average is 3.5 days). Because the system settles retailer accounts on a daily basis, we asked retailers how much time elapsed, on average, between an EBT sale and when credit for that sale was received and posted to their bank account.

Estimated Float Costs

Float costs under the EBT and coupon systems are presented in Exhibit 4.13. Across all stores, float cost decreased under EBT by $0.09 per $1,000 of redemptions, a small but statistically significant effect. Float cost declined because the number of days between sale and bank credit fell under EBT—an average of 2.09 days under coupons, but only 1.17 days under EBT. The small, negative, statistically significant impact of EBT on float costs persists across

23. It generally takes one or two days for the system processor to credit the retailer's financial institution, depending on the timing of the retailer's end of business day. Furthermore, some banks credit the retailer's account the day after they receive the ACH credit. Thus, the entire retailer credit process takes one to three days between EBT sale and credit to a retailer's account.

each of the subsamples defined by store types. The reduction in standardized costs is greatest for other stores ($0.25) and smallest for grocery stores ($0.07).

EXHIBIT 4.13

FLOAT COSTS UNDER COUPON AND EBT SYSTEMS

			Store Type			
		All Stores	Super-markets	Grocery Stores	Convenience Stores	Other Stores
Average total days from sale to store credit	EBT	1.17	1.20	1.13	1.24	1.27
	Coupons	2.09	2.11	1.89	2.93	4.19
Average standardized cost, dollars per $1,000 of benefits redeemed	EBT	$0.09	$0.08	$0.09	$0.09	$0.10
	Coupons	0.17	0.18	0.16	0.24	0.35
	Difference	**-$0.09****	**-$0.09****	**-$0.07†**	**-$0.15****	**-$0.25****
Assumed annual interest rate		3.5%	3.5%	3.5%	3.5%	3.5%
Average monthly food stamp and cash assistance redemptions, EBT		$15,077	$45,831	$16,119	$1,242	$2,200
Average monthly food stamp redemptions, coupons		$12,781	$37,667	$14,280	$895	$2,047
Sample size		150	24	31	34	61

Note: ** Statistically significant at the 1 percent level.
* Statistically significant at the 5 percent level.
† Statistically significant at the 10 percent level.

Source: Pre/post retailer survey.

4.8 ACCOUNTING ERROR LOSSES

Accounting error losses are defined as the value of any permanently unreconciled discrepancies between an amount credited to a retailer's bank account and the actual value of the sale. These errors do not include discrepancies that are ultimately resolved, although retailer labor to resolve these discrepancies was included in Section 4.4 under handling costs. We

compare paper system accounting error costs from food stamp transactions with accounting error costs from EBT transactions, which include both food stamp and cash assistance transactions.

Coupon System Accounting Errors

The labor-intensive paper coupon redemption process leaves open many vulnerabilities to retailer accounting errors. Food stamp coupons can be miscounted by the checkout clerk during the transaction, by the store manager while preparing the deposit, or by the bank teller who accepts the deposit. Automated counting machines do not solve the problem. Retailers and bank officials note that because food stamp coupons circulate only once, the crispness of the coupon paper makes them difficult for even machines to count accurately.

EBT System Accounting Errors

The near fully-automated procedures by which the EBT system processes redemption credits greatly reduce the number of situations in which errors may result in permanent retailer losses. Losses can arise, however, when transaction reversals occur or as a result of nonauthorized voucher transactions.

Transactions reversals can arise in several situations. Most commonly, an EBT transaction is "reversed" when the telecommunications link between the store terminal and system host is interrupted, or when the system exceeds a preset amount of time ("times out") before processing the transaction. If a transaction reversal occurs, the EBT system cancels the transaction and offsets all debits and credits made to client and retailer accounts. A permanent retailer loss can result from a transaction reversal if the retailer does not notice immediately that the transaction was reversed; a permanent accounting error would occur for the amount of the sale.

Permanent retailer losses also can result from unauthorized voucher transactions that are not covered by client balances. As mentioned in Section 4.5, voucher transactions that are authorized are guaranteed, but Maryland guarantees only $40 for unauthorized voucher

transactions.[24] Thus, if a client does not have sufficient funds available in his or her account to cover an unauthorized voucher transaction, retailers incur losses equal to the total amount of the transaction.

Methodology

Estimates reported in this section are based on retailer perceptions rather than documented events. Retailer perceptions of accounting losses, however, may be somewhat distorted. For instance, retailers who experience difficulty reconciling their EBT activity may perceive an accounting error when none actually exists. Alternatively, retailers who do not notice that a transaction has been reversed may experience a loss without knowing it.

The estimates of accounting losses in this section measure only the value of perceived losses and exclude the possible labor cost of resolving the error and the interest foregone by the unavailability of the funds. The labor cost of resolving the error may have been included in the analysis of handling and reconciliation costs (Section 4.4), although respondents were not told explicitly to include such effort. The foregone interest on corrected accounting errors is considered too small in any given store to be measurable.

Estimated Accounting Error Costs

The number of stores reporting losses is small under both systems, but is higher under the paper system than under EBT. As shown in Exhibit 4.14, 13 retailers, or roughly one in twelve, reported an accounting loss with coupons, but only six reported a loss under the EBT system. The average value of reported losses is, however, higher under EBT. Average reported losses (for those reporting any losses) were $112 under EBT, but only $16 under the paper system.

As a result, accounting error costs rose slightly under EBT. The average cost, standardized in terms of $1,000 of redemptions, was $0.19 under EBT but $0.08 under the paper system, a statistically insignificant increase of $0.11.

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24. The system vendor is currently guaranteeing $100 for unauthorized transactions if the transaction occurs during food stamp issuance (when the stores are busy) and the store cannot process the transaction electronically, and the telephone line to the system's Help Desk is busy. The store must call the Help Desk for authorization within 12 hours.

EXHIBIT 4.14

ACCOUNTING ERROR LOSSES UNDER COUPON AND EBT SYSTEMS[a]

			Store Type			
		All Stores	Super-markets	Grocery Stores	Convenience Stores	Other Stores
Number of stores reporting losses	EBT	6	6	0	0	0
	Coupons	13	7	1	2	3
Average dollar value of reported losses	EBT	$112	$112	—	—	—
	Coupons	16	17	2	2	12
Average standardized cost, dollars per $1,000 of benefits redeemed	EBT	$0.19	$0.37	$0.00	$0.00	$0.00
	Coupons	0.08	0.13	0.00	0.14	0.28
	Difference	**$0.11**	**$0.24**	**$0.00**	**-$0.14**	**-$0.28**
Average monthly food stamp and cash assistance redemptions, EBT		$15,077	$45,831	$16,119	$1,242	$2,200
Average monthly food stamp redemptions, coupons		$12,781	$37,667	$14,280	$895	$2,047
Sample size		150	24	31	34	61

Notes:
- [a] These results reflect respondents' perceptions of losses and do not report documented losses.
- ** Statistically significant at the 1 percent level.
- * Statistically significant at the 5 percent level.
- † Statistically significant at the 10 percent level.
- — No loss reported, no average available.

Source: Pre/post retailer survey.

The impact of EBT on accounting error costs varied by store types, but all impacts are statistically insignificant. The change in costs was largest for other stores (-$0.28), followed by supermarkets ($0.24), convenience stores ($0.14), and grocery stores ($0.00). Clearly, these cost changes were the result of a small number of errors, and varied over time and between store subsamples largely by chance.

Table of Contents

commercial credit or debit transactions as well as EBT transactions, we treat only 50 percent of the estimated space cost as an EBT cost.

Estimated EBT System Space Costs

As Exhibit 4.15 shows, the space occupied by EBT store equipment in all checkout lanes added about $15.15 per month to the costs of the average store, or about $1.01 per $1,000 of benefits redeemed. Retailers estimated, however, that only 35.5 percent of the EBT equipment space would have been used for alternative purposes, such as product displays or advertisements. By considering only EBT space that has an alternative use—and thus a positive opportunity cost—average retailer space costs drop to $0.47 per $1,000 of EBT redemptions. These standardized costs are highest for other stores ($3.25), followed by convenience stores ($0.88), supermarkets ($0.46) and grocery stores ($0.28). These space costs are, with the exception of grocery store costs, statistically different from zero.

4.10 Other Fee Costs

The final cost element considered in this chapter accounts for other fees or expenses paid by retailers to participate in the food stamp coupon and EBT systems.

Methodology

Estimates of other fees paid under the food stamp coupon system are based on data provided by retailers. Retailers were asked if their store paid any fees to the bank for handling and processing food stamp coupon deposits and, if so, the amount of the fees.[28] Similarly, retailers were asked about any EBT fees paid to banks for deposit services.[29]

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28. Program regulations state, however, that "no financial institution may impose on or collect from a retail food store a fee or other charge for redemption of coupons that are submitted to the financial institution in a manner consistent with the requirements, except for coupon cancellation, for the presentation of coupons by the financial institution to the Federal Reserve banks." Food Stamp Program Regulations, Section 278.5.

29. We omit one-time fees, such as startup fees, because we assume these costs are negligible when spread over months of redemptions. We note also that, although this section reports only on fees paid to banks, the surveys asked more general questions about them. The only fees reported by retailers were those paid to banks.

EXHIBIT 4.15

SPACE COSTS UNDER THE EBT SYSTEM

	All Stores	Store Type			
		Super-markets	Grocery Stores	Convenience Stores	Other Stores
Average EBT space, square feet per store	2.2	5.7	1.5	1.3	1.5
Average cost, dollars per month	$15.15	$44.40	$11.36	$2.21	$12.13
Average standardized cost, dollars per $1,000 of benefits redeemed	**$1.01****	**$1.03***	**$0.64**	**$1.81****	**$5.93†**
Percentage of EBT space with alternative purposes	33.8%	27.8%	31.9%	38.6%	36.6%
Average standardized cost of space with alternative purposes, dollars per $1,000 of benefits redeemed[a]	**$0.43****	**$0.39***	**$0.28**	**$0.81****	**$3.25†**
Average monthly food stamp and cash assistance redemptions, EBT	$15,077	$45,831	$16,119	$1,242	$2,200
Sample size	150	24	31	34	61

Notes:
[a] For stores using their terminals for commercial activity as well as EBT, 50 percent of the standardized cost has been treated as an EBT cost.
** Statistically significant at the 1 percent level.
* Statistically significant at the 5 percent level.
† Statistically significant at the 10 percent level.

Source: Pre/post retailer survey.

Estimated Other Fee Costs

Retailers' standardized fee costs increased by $0.12 under EBT. As shown in Exhibit 4.16, these standardized fees totaled $0.04 under the paper system, but $0.16 under EBT. Average fees per month, regardless of redemptions, were also higher under EBT—$3.36 per month versus an average of $0.34 per month under the paper system. The impact on standardized costs, however, is statistically insignificant.

The impact of EBT on standardized fee costs varies by store type, but all impacts are statistically insignificant. The positive impacts are highest for other stores ($2.15), followed by

Table of Contents

EXHIBIT 4.16

OTHER FEES UNDER THE COUPON AND EBT SYSTEMS

			Store Type			
		All Stores	Super-markets	Grocery Stores	Convenience Stores	Other Stores
Average monthly fees	EBT	$2.60	$3.36	$2.25	$0.24	$5.95
	Coupons	0.46	0.88	0.03	0.46	0.95
Average standardized cost, dollars per $1,000 of benefits redeemed	EBT	$0.16	$0.06	$0.12	$0.07	$2.78
	Coupons	0.04	0.03	0.00	0.30	0.63
	Difference	**$0.12**	**$0.02**	**$0.12**	**-$0.23**	**$2.15**
Average monthly food stamp and cash assistance redemptions, EBT		$15,077	$45,831	$16,119	$1,242	$2,200
Average monthly food stamp redemptions, coupons		$12,781	$37,667	$14,280	$895	$2,047
Sample size		150	24	31	34	61

Note: ** Statistically significant at the 1 percent level.
* Statistically significant at the 5 percent level.
† Statistically significant at the 10 percent level.

Source: Pre/post retailer survey.

grocery stores ($0.12), and supermarkets ($0.02). Convenience stores saw a small decrease in standardized fee costs; this impact was -$0.23.

From our analysis of the impacts of the Maryland EBT system on financial institutions (Chapter Six), we know that many banks charge customers when their accounts are credited with an electronic funds transfer. This is not an EBT-specific charge. Because the Maryland EBT system uses electronic funds transfers to credit retailer accounts, however, the result is that many retailers are charged for EBT credits. It is possible that the shift to EBT has allowed banks to charge retailers fees for food stamp deposits that, previously, were not allowed by government regulations. It is also possible, however, that retailers incurred—but did not report—parallel deposit fees when, in the pre-implementation survey, we asked about fees relating to coupon deposits.

4.11 TOTAL COSTS

Combining the costs of the eight major components of participation, EBT system costs to participating retailers in the combined sample of all stores were lower, but only by $0.06 per $1,000 of benefits redeemed. This EBT cost impact, which is presented in Exhibit 4.17, is statistically insignificant.

Of the eight major cost elements analyzed in this chapter, two decreased under the EBT system. The biggest source of EBT cost savings was in the cost to handle and reconcile food stamp sales. Float costs also decreased under the EBT system, although by a much smaller magnitude than handling costs.

Six cost categories—checkout productivity, training, reshelving, space, accounting errors, and other fees—increased under the EBT system. Checkout productivity cost increased under the EBT system by $1.63 per $1,000 of redemptions—the largest increase of any cost component. Next, EBT reshelving activities increased costs relative to the coupon system by $1.10 per $1,000 of benefits. The space used by EBT store equipment added $0.43 to standardized participation costs, and food stamp training increased by $0.59 per $1,000 of benefits under an EBT system. Under EBT, the costs from other fees and accounting errors together increased costs relative to the coupon system by $0.23 per $1,000 of benefits.

It should be noted that estimates of checkout productivity and space costs may actually overstate EBT costs. As mentioned in Section 4.3, the opportunity cost of longer EBT transactions is lower than the estimated costs. Space cost estimates may overstate the true cost of the space occupied by EBT terminals if retailers can find other spaces without alternative use to place displays or advertisements displaced by EBT terminals.

The analysis indicates that, as with the entire sample of stores, the EBT system had no statistically significant impact on operating costs within any of the four subgroups of stores. Costs declined somewhat under EBT for supermarkets and convenience stores; they rose somewhat for grocery stores and other stores.

As a final check on our results, we also counted the retailers whose change in total standardized costs under EBT fell within three ranges—a decrease of more than 50 cents, a decrease or increase of less than 50 cents, and an increase of more than 50 cents. Our overall finding of small impacts may have arisen because of a fairly equal distribution of positive and negative impacts. Alternatively, our impact estimates may have arisen because a large majority

EXHIBIT 4.17

TOTAL COST DIFFERENCE BETWEEN THE EBT AND COUPON SYSTEMS
(dollars per $1,000 of benefits redeemed)

	All Stores	Store Type			
		Super-markets	Grocery Stores	Convenience Stores	Other Stores
Checkout	$1.63**	$1.16**	$2.15**	$4.38**	$4.38**
Handling	-4.08**	-5.00**	-3.11**	-2.28	-3.87
Training	0.59	1.07	0.15	-0.40	-0.60†
Reshelving	1.10	0.40	2.26	-2.25	-1.63
Float	-0.09**	-0.09**	-0.07†	-0.15**	-0.25**
Accounting errors	0.11	0.24	0.00	-0.14	-0.28
Space	0.43**	0.39*	0.28	0.81**	3.25†
Other fees	0.12	0.02	0.12	-0.23	2.15
Total	**-$0.06**	**-$1.81**	**$1.79**	**-$0.26**	**$3.15**
Total cost per $1,000					
EBT	$13.75	$15.89	$7.65	$42.38	$26.95
Coupon	$13.81	$17.69	$5.87	$42.64	$23.18
Average monthly food stamp and cash assistance redemptions, EBT	$15,077	$45,831	$16,119	$1,242	$2,200
Average monthly food stamp redemptions, coupons	$12,781	$37,667	$14,280	$895	$2,047
Sample size	150	24	31	34	6

Note: ** Statistically significant at the 1 percent level.
* Statistically significant at the 5 percent level.
† Statistically significant at the 10 percent level.

Source: Pre/post retailer survey.

of stores' costs changed in one direction, but a small number of stores experienced very large, opposite changes in costs. If the latter is true, we might want to re-examine these few "outliers" to decide whether they reflect errors, such as reporting errors or coding errors.

The small insignificant impact estimates arise because nearly equal numbers of retailers experienced positive and negative cost changes, which essentially cancelled one another. Within the sample of supermarkets, 10 stores experienced decreases of standardized costs of more than 50 cents, 13 stores experienced increases of more than 50 cents, and 1 store experienced a cost change of less than 50 cents in absolute value. Within the sample of grocery stores, 16 stores experienced cost decreases, 14 experienced cost increases, and 1 store experienced a cost change of less than 50 cents in absolute value. Among the convenience stores, 17 experienced cost decreases, 16 experienced cost increases, and 1 experienced a minor cost change. Finally, among the other stores, 21 experienced cost decreases, 39 experienced cost increases, and 1 experienced a minor cost change. In sum, the small average impact estimates are a realistic reflection of a range of cost changes distributed fairly evenly above and below zero.

4.12 Impacts with Cash Assistance Programs Included

The EBT impacts presented in this chapter reflect the estimated impacts on retailers' operating costs when food stamp recipients pay for groceries with an EBT card rather than with food stamp coupons. The overall impact of the Maryland EBT system on retailers, however, also includes effects arising from cash program recipients using the EBT system. Under the EBT system, the approximately 31 percent of retailers in our sample who previously cashed assistance checks no longer do so. In addition, all retailers participating in EBT now may process EBT transactions for public assistance and NPA Child Support clients wishing to buy groceries. Furthermore, a number of retailers (40 percent in our sample) provide cash withdrawal services at the EBT terminal.

The EBT system thus eliminates retailers' costs of cashing public assistance and child support checks, but it adds other costs. In particular, purchases which may have been paid for before with cash (after a public assistance or child support check had been cashed) may now be paid for with an EBT transaction. Plus, instead of a single check cashing transaction per customer per month, retailers offering cash withdrawal may process several withdrawals per month for some EBT customers.

Conceptually, the more general impacts of EBT could be estimated in the following way. For each cost component:

Table of Contents

(1) Estimate the pre-implementation costs associated with food stamp coupons ***and*** assistance checks;

(2) Divide these combined paper costs by the sum of food stamp coupon redemptions ***and*** the value of cashed assistance checks;

(3) Estimate the costs associated with the EBT system;

(4) Divide these EBT costs by the sum of food stamp EBT redemptions and cash program EBT redemptions; and

(5) Compare the standardized EBT costs to the standardized paper costs.

With the exception of checkout costs and training costs under EBT, the evaluation accomplished steps 3 and 4. Training costs were divided only by food stamp redemptions because, as noted in Section 4.5, we did not want the EBT effect on training costs (largely a fixed cost with regard to redemption levels) to be confounded by changes in redemption levels. For impacts on checkout productivity, we measured the time needed to process EBT transactions against cash accounts, but so few cash EBT transactions were observed that reliable estimates of the time needed for a cash EBT transaction could not be estimated. We return to this issue later in this section.

Under check issuance, we asked retailers to estimate the time required to cash assistance checks and to deposit the checks in their bank accounts. Nearly 31 percent of the respondents in our sample said their stores cashed assistance checks. When these stores' costs are divided by the value of cashed assistance checks, the standardized cost is $7.23, nearly the same as the estimated standardized cost for handling food stamp coupons ($7.73, as presented in Exhibit 4.10). If customers cashing assistance checks then left the store without making any purchases, we can accurately estimate the combined cost of dealing with coupons and checks by dividing all measured costs by the sum of coupon redemptions and cashed assistance checks. If some customers used part of the funds from the cashed checks to buy groceries, however, the store incurs a cost that has not been measured uniformly across all components. We have no data indicating the frequency with which recipients cashing assistance checks then made purchases with that cash.

On the EBT side, we have usually assumed that there is little difference in standardized EBT costs when dealing with food stamp or cash assistance accounts. We did not assume this

Table of Contents

for checkout costs; in Section 4.3 we estimated the incremental costs only of food stamp transactions. The incremental cost associated with EBT cash transactions would be greater, because the time to complete the EBT transaction would be compared to a cash transaction rather than a coupon transaction, and our analysis indicates that coupon transactions take longer than simple cash transactions. In addition, we cannot estimate the time needed for an EBT withdrawal of cash because very few withdrawals were observed.

We believe it is quite likely that the combined food stamp and cash assistance impact of EBT on stores' operating costs would not be much different from the food stamp related cost impacts presented in this chapter.[30] Errors introduced by unavailable data will offset each other somewhat.[31] More importantly, food stamp redemptions under both the paper and EBT systems represented 85 percent of the sum of food stamp and cash assistance redemptions. Thus, any differential impacts associated with replacing assistance checks with EBT will be greatly reduced when averaged over all redemptions. Finally, while EBT will increase standardized operating costs more if public assistance and child support clients make more purchases under EBT than with check issuance, we are confident that retailers would view increased sales as a positive element of EBT rather than a drawback.

We conclude this section by noting that, while retailers participating in EBT are required to process EBT sales made against EBT cash accounts, cashing assistance checks and allowing EBT cash withdrawals are voluntary actions that retailers take. Even if such actions increase stores' operating costs, retailers presumably benefit from increased sales, improved customer loyalty, or better neighborhood relations. Because these are voluntary actions, whose costs are presumably offset by greater benefits, it is not unreasonable to disregard the operating costs associated with the actions when evaluating the impacts of EBT. With this approach, the

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30. Keeping in mind the data limitations discussed in the text, we note the following provisional estimate of the combined food stamp and cash assistance program impact of the Maryland EBT system on retailers. Rather than reducing operating costs by $0.06 for every $1,000 of food stamp benefits redeemed, EBT increases operating costs by $0.32 for every $1,000 of food stamp ***and*** cash assistance benefits redeemed. The $0.32 estimate is not statistically significant.

31. Because we could not estimate the increased checkout costs associated with EBT cash transactions, our estimates of EBT costs are too small. To the extent that customers cashing assistance checks also spent money in the store, however, we have missed some paper-related costs. Higher paper-related costs would reduce the impact of increased costs under EBT, offsetting somewhat the error introduced by not being able to estimate overall EBT impacts on checkout costs.

Table of Contents

only EBT cost element not accounted for in this chapter's impact estimates is the increased costs due to some cash transactions (those previously made by cash assistance clients after cashing their checks) being replaced by more costly EBT transactions.

4.13 EBT Impacts by Urban Status

The impact of EBT on standardized costs may differ across stores grouped by location rather than by store type. In this section, we briefly examine whether retailers in rural and urban settings[32] experienced different cost changes under EBT, using the food stamp related cost changes presented throughout most of this chapter. We summarize this analysis in Exhibit 4.18.

Caution is necessary in interpreting these estimates of the impact of EBT on costs of rural and urban stores. Much of the difference between overall cost impacts by location may arise from locational distribution of store type subgroups. More important, when we divide a sample of 150 stores into eight subgroups (by store type and by location) and examine urban-rural differences in cost impacts within store types, we are examining impacts for relatively small samples of retailers.

Keeping in mind that none of the cost changes shown in Exhibit 4.18 are statistically significant, we note that the directional effect of location also is not consistent across store types. While EBT impacts by store type generally were more favorable for urban retailers, urban grocery stores experienced a cost increase under EBT, in contrast to a cost reduction estimated for rural grocery stores.[33] The best conclusion from this analysis is that we have found no strong evidence of consistent differences in EBT's impact on costs across stores grouped by location.

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32. As noted at the beginning of the chapter, the urban/rural status of a store depends on its zip code address. We used U.S. Census boundaries for "urbanized" areas to classify zip codes into urban and rural categories.

33. The large but insignificant impact shown for rural other stores ($21.17) arises because monthly redemption levels for these stores were quite low. As redemption levels approach very low levels (under $100 per month), standardized costs become very large; estimated monthly costs get multiplied by factors of 10 and greater. Normally, the high standardized cost estimate for a low-volume store has little effect on group means because the means are weighted by redemption level. When all stores within a small sample have low redemption levels, however, unusually large mean effects are possible.

EXHIBIT 4.18

TOTAL COST DIFFERENCE BETWEEN THE EBT AND PAPER SYSTEMS: URBAN AND RURAL STORES
(dollars per $1,000 of benefits redeemed)

		Store Type			
	All Stores	Super-markets	Grocery Stores	Convenience Stores	Other Stores
All	-0.06 (n=150)	-1.81 (n=24)	1.79 (n=31)	-0.26 (n=34)	3.15 (n=61)
Urban stores	-0.04 (n=111)	-2.03 (n=18)	1.92 (n=20)	-0.49 (n=25)	0.31 (n=48)
Rural stores	-0.22 (n=39)	-0.74 (n=6)	-3.59 (n=11)	0.49 (n=9)	21.17 (n=13)

Notes: Sample sizes shown below impact estimates.
** Statistically significant at the 1 percent level.
* Statistically significant at the 5 percent level.
† Statistically significant at the 10 percent level.

Source: Pre/post retailer survey.

4.14 COMPARISON WITH PREVIOUS STUDIES

In Exhibit 4.19, we compare the impact estimates in this study with those from other studies. The small, negative, statistically insignificant impact of EBT on retailers' standardized costs in this study is smaller than the cost reductions under EBT estimated in other studies. In the Reading, Pennsylvania demonstration, standardized costs fell by $6.60. In Bernalillo County, New Mexico, standardized costs fell by $3.98. In Ramsey County, Minnesota, standardized costs fell by $9.09.

Nevertheless, the directional changes in specific cost categories are strikingly similar across studies. In each of these studies, checkout costs and reshelving costs rose. The costs of training and accounting errors also rose consistently under EBT, although generally by small amounts. The costs of space naturally rose across studies because space is never a cost under the paper system.

On the other hand, in each of these studies, the costs of handling and reconciliation fell significantly under EBT. Float costs also fell consistently under EBT, but by much smaller amounts.

Table of Contents

EXHIBIT 4.19

COMPARISON OF TOTAL EBT/COUPON COST DIFFERENCES FOUND IN MARYLAND AND IN OTHER STUDIES
(dollars per $1,000 of benefits redeemed)

	Maryland	Reading, Pennsylvania	Bernalillo County	Ramsey County
Checkout	$1.63**	$0.38	$1.67**	$1.19**
Handling	-4.08**	-9.57**	-9.44**	-17.66**
Training	0.59	-0.08	0.85	0.54
Reshelving	1.10	0.82*	2.31**	3.10**
Float	-0.09**	-0.05	-0.04†	-0.36**
Accounting errors	0.11	0.26†	0.37**	1.29**
Space	0.43**	0.65[a]	0.57[a]	3.90[a]
Other fees	0.12	0.26	-0.27*	-1.09**
Total	**-$0.06**	**-$6.60[a]**	**-$3.98****	**-$9.09†**
Total cost per $1,000				
EBT	$13.75	$17.28	$13.85	$36.96
Coupon	$13.81	$23.88	$17.83	$46.05
Average monthly redemptions, EBT	$15,077	$3,791	$34,498	$5,619
Average monthly redemptions, coupons	$12,781	$1,131	$16,329	$2,706
Sample size	150	114	44	43

Notes:
[a] Statistical significance not reported.
** Statistically significant at the 1 percent level.
* Statistically significant at the 5 percent level.
† Statistically significant at the 10 percent level.

While differences in EBT's impact on costs across these studies stem from many sources, a major reason for the relatively smaller impact estimate in the Maryland sample is the relatively smaller impact of EBT on handling costs. Handling costs fell by only $4.08 in Maryland, but by over $9 in Reading and Bernalillo county, and by almost $18 in Ramsey County.

The smaller impact on handling costs in Maryland arise due to low coupon handling costs in Maryland rather than high EBT costs. Coupon handling costs in Maryland are $7.73

per $1,000 of benefits redeemed (Exhibit 4.10) versus $15.58 in Bernalillo County, $37.74 in Ramsey County, and $19.26 in Reading.[34] These differences across sites in coupon handling costs account for much of the cross-site difference in total coupon-related costs shown in Exhibit 4.19. We can offer no ready explanation for why coupon handling costs in Maryland are so low. Handling costs, however, have shown great variability across sites, even without the Maryland results.

The consistency of the direction, if not always the magnitude or statistical significance, of findings across multiple studies is noteworthily. Survey respondents were asked, at separate times, about costs related to food stamp coupons and EBT activity. The surveys asked for detailed information about operations that often represented a relatively minor proportion of total store revenues. It is likely that responses to questions about how often a task was performed or how long it took to complete often included error.

Despite these problems, when we look at these impact estimates and retailers' opinions

CHAPTER FIVE
EBT IMPACTS ON CHECK CASHING ORGANIZATIONS

This chapter presents our analysis of the effects of the Maryland EBT demonstration on check cashing organizations. Prior to the implementation of the EBT system, owners and managers of a number of check cashing organizations voiced concern that EBT would adversely affect their businesses by reducing the volume of public assistance checks needing to be cashed and, for those stores that had food stamp coupon issuance contracts with the Maryland Department of Human Resources (DHR), by eliminating this line of business.

Section 5.1 presents an overview of the check cashing industry and describes our research approach and data collection efforts. Section 5.2 describes the check cashing organizations interviewed prior to EBT implementation. Section 5.3 presents information about check cashing organizations in Maryland after EBT implementation, with a focus on impacts that may be attributable to EBT.

5.1 INTRODUCTION

Overview of the Check Cashing Industry

Check cashing organizations (CCOs) provide a variety of services, both financial and non-financial, with their core service being cashing checks for a fee. The check cashing industry began in the 1930s in response to banking problems during the Depression and to changes in employer payment practices. As firms began converting from cash payrolls to payroll checks there was a demand for CCOs. It is difficult to say exactly when businesses began to specialize in check cashing for a fee. Most evidence suggests that CCOs evolved from other businesses that cashed checks on the side. They appeared first in Chicago and New York, and began spreading to other large urban areas in the 1930s.[1]

The core business of a contemporary CCO is still to cash checks for a fee. The fee is intended to provide the owner with a profit after covering expenses (storefront, insurance, and personnel). Owners must advance funds that have to be cleared through the banking system.

1. John P. Caskey, "Check-Cashing Outlets in the U.S. Financial System," *Economic Review*, November/ December 1991, pp. 63-67.

Thus, they incur interest expenses on the funds advanced. They run the risk that some checks cashed will be uncollectible. Check cashers typically charge a higher fee for personal checks than government checks or payroll checks due to the higher risk that the check will bounce.

Almost all CCOs do more than just cash checks. They offer a range of financial and nonfinancial services such as money orders, wiring money, utility payments, lottery tickets, transportation passes, income tax preparation, and distribution of welfare payments and food stamps. Such is the case in Maryland, particularly in Baltimore City and Prince Georges County, where check cashers played a role in the distribution and redemption of public benefits.

Prior to the implementation of the expanded EBT demonstration in Maryland, the DHR used authorization-to-participate (ATP) cards to issue food stamp benefits in Baltimore City, Baltimore County, and Prince Georges County. Food stamp recipients could exchange their ATPs for food stamp coupons at the local welfare offices or, in Baltimore City and Prince Georges County, at a number of check cashing stores which DHR had contracted to act as coupon issuance agents. In addition, public assistance recipients around the state could cash their public assistance checks at check cashing stores, if they chose to pay a fee.

Research Approach

Check cashing organization owners and managers were fearful that their business would suffer with the implementation of EBT. Public assistance recipients would no longer have checks to cash, and food stamp recipients would no longer have to redeem ATP cards for food stamp benefits. Thus, the check cashers stood to lose a portion of their business. Our hypothesis for the impact of EBT on CCOs was that EBT might cause some stores to go out of business. Others might change location or adopt new business strategies in response to EBT.

The original research questions for the evaluation were:

- What is the effect of the electronic system on net operating revenues (revenue minus liabilities and operating costs) of the check cashing organizations that perform issuance and redemption functions in the paper-based system?

- What is the impact of EBT on check cashing stores' business volumes and profitability? What steps do store owners take in response to the change in business?

Originally, the State of Maryland and Deluxe Data Systems had no plans to continue to use check cashers for the distribution of benefits once EBT was implemented. After much negotiation between Deluxe and the Maryland Check Cashers Association, the system vendor agreed to deploy EBT terminals within some check cashing stores. This would allow public assistance recipients to withdraw their funds at the check casher, free of charge, as an alternative to the ATM machine. For each transaction, the store receives a transaction fee from the system vendor for each withdrawal above a specified amount. The current fee structure for transactions is:

- Under $180.00: no fee;
- $180.00 - $300.00: 50 cents;
- Over $300.00: 75 cents.

In order to determine the impact of EBT on the check cashing industry, our research questions were altered to consider the broad picture, but focus on stores with EBT terminals. Research questions added were:

- What impacts did the EBT system have on the store's business volumes and profitability prior to the installation of the EBT terminal? What steps did the owner take in response to the change in business?
- After the EBT terminal was installed, were any negative impacts on the store's business volumes reversed? If so, by what degree?
- What has been the store's experience with EBT since the terminal was installed?
- Which system (paper or EBT) do the store owners prefer?

Finally, to assess whether the introduction of EBT caused any check-cashing stores to go out of business, the last research question was:

- How many check cashing stores were operating in Maryland prior to the implementation of EBT? How many are operating after EBT implementation? If a change occurred, how much of the change can be attributed to the presence of the EBT system?

Data Collection Procedures

The first step in gathering data from check cashing stores was to choose a sample of CCOs in Baltimore City and Prince Georges County that had contracts with the State to redeem ATPs, as well as to identify check cashing stores in the rest of the state. The sample of stores chosen was random. Three stores in Prince Georges County were chosen, five in Baltimore City, and one in the rest of the state.[2] Interviews were completed with all nine stores prior to the implementation of EBT.

The pre-implementation interviews provided insight into the check cashing industry. Most managers and owners were cooperative when contacted for the interview. While they were willing to discuss their general business practices, not all would reveal such specifics as business volume. Even though confidentiality was assured, it was very difficult to get specific figures from the respondents on their lines of business and profitability. Their business is a competitive one, and most felt strongly about not revealing business figures. As a result, this chapter's data analysis is largely qualitative with little empirical analysis.

5.2 Check Cashing Organizations Prior to EBT

Characteristics of Stores

As shown in Exhibit 5.1, at the time of the pre-implementation interviews the stores in our sample had been in business an average of 12 years. They had an average of three full-time staff and one part-time staff. Approximately 25 percent of their check cashing business came from cashing government checks for programs to assist needy families (AFDC, PAA, etc.). Check cashing fees in our sample of stores ranged from 1 to 2.3 percent of the value of the check, with an average fee of 1.8 percent. For example, for the average AFDC allotment of $323.00 in Baltimore City, a 1.8 percent fee would equal $5.81.[3] Most stores reported having a range of fees for cashing checks, with higher fees assessed on high-risk checks such as personal checks. None of the stores reported charging a higher fee for public assistance checks.

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2. Prior to EBT implementation, there were only eight check cashing stores in Maryland outside of Baltimore City and Prince Georges County. Four of these were in Montgomery County, which converted to EBT prior to sample selection for the pre-implementation interviews. Thus, the four stores in Montgomery County were excluded from the sample universe.

3. Average AFDC allotment based on July 1993 data.

Table of Contents

EXHIBIT 5.1

CHARACTERISTICS OF CHECK CASHING STORES

Characteristic	Average
Years in business	12 years
Staff	3 full-time, 1 part-time
Government checks cashed	25% of total

Stores in our sample that were willing to discuss their business redeemed an average of 1,700 ATPs per month. The number of ATPs redeemed each month ranged from 800 to 2,500. Responses to questions about profitability were varied. Respondents were evenly split between finding the arrangement very profitable and somewhat profitable. One respondent said that the store broke even. One owner estimated that he made 25 cents on every dollar he received from redeeming ATPs.[4]

The owners openly shared their opinions about the EBT system; all the check cashers believed that EBT would affect their business in a negative way. Exhibit 5.2 shows the check cashers' planned responses to EBT. While 33 percent said they would go out of business, many owners said that they would probably survive but with adjustments to their business practices. The most common responses were to cut back on staff and raise rates. Several owners with multiple stores expected to close one or more sites. Other responses included expanding into other lines of business and simply doing nothing in response to EBT. All said that the income lost from cashing checks could not be made up. The check cashing organizations felt that an important service would be lost if they were not involved in the system. The check cashers view themselves as providing financial services in neighborhoods that banks are not willing to operate in. In their words, the check cashers can provide "the best services at the lowest prices."

Almost all of the owners expressed doubts that the EBT system could work, especially in Baltimore City. Their doubts were founded on the lack of ATMs in the neighborhoods and the perceived inability of banks to keep the machines stocked with enough money. The owners believed there would be riots if the system went down or the machines ran out of money. One

4. DHR paid check cashers about one dollar for every ATP they redeemed.

EXHIBIT 5.2

PLANNED RESPONSES TO EBT

Response	Percentage[a]
None	11%
Go out of business	33
Cut back on staff	33
Cut back on hours	0
Raise rates	22
Expand into other lines	11
Relocate	0

[a]Percentages based on nine responses. Multiple responses allowed.

comment made was that the check cashers "brought financial services to the neighborhoods and now they [the State] want to take them out."

5.3 CHECK CASHING ORGANIZATIONS AFTER EBT

In August and September of 1993 attempts were made to conduct follow-up interviews with the nine stores that participated in the pre-implementation data collection. Three of the stores, one in Prince Georges County and two in Baltimore, had gone out of business. The two stores in Baltimore were part of the largest chain of check cashing stores in the city. It has been confirmed that this company closed or sold all of its approximately 15 stores after the implementation of EBT. Of the remaining six stores, not one of them was participating in the program, meaning none had EBT terminals in the store. One owner had the terminal for several weeks, but returned it. His opinion was that it was a "disaster." He found that the terminal brought nothing to his business in terms of profit. Instead it caused problems for him and his staff. When the system went down, the customers became angered with the staff. The customers did not understand that the staff could not control the system.

Because none of the nine stores in our pre-implementation sample remained in the program, we attempted to conduct post-EBT interviews with ten other stores that we knew to have EBT terminals. The ten stores were contacted and solicited to participate in the study. Unfortunately, all refused to participate.

Table of Contents

This nonresponse may be partially explained by the fact that check cashers are displeased with the contract that was negotiated with Deluxe Data Systems. According to Brian Satisky, president of the Maryland Check Cashing Association, check cashers feel that they were treated badly and brought into the process too late.[5] They are unhappy because they have been serving the people of the neighborhoods for 25 years, yet they were not consulted when the system was being designed.

Mr. Satisky pointed out that the banks are receiving 55 cents per Independence card (ATM) transaction, regardless of the amount.[6] He believes that the State and Deluxe would like the check cashers to provide EBT services without adequate compensation. The check cashers feel that it is unfair to expect them to process transactions of less than $180 for no fee, especially given the number of requests they receive for small amounts.[7]

Mr. Satisky noted the risks check cashers take to provide their services. These stores front their own cash in order to cash checks or process Independence card transactions. They incur insurance costs and interest, and take the risks of cashing bad checks. Bad checks, according to Mr. Satisky, are often a loss that owners never recover. There is an element of danger involved in the business, particularly in the transfer of money if an armored truck is not involved.

Mr. Satisky's general opinion of the EBT system is that it works well for the Food Stamp Program, but not for cash benefits. He thinks that it has drawbacks and that the check cashers can improve the way it works. One argument for involving the check cashing stores is that the availability of ATMs in the city is limited. Recipients are traveling to the suburbs to access their cash benefits. Even where there are ATMs in the city, clients are hesitant to use them due to the potential danger of being robbed. The check cashers can provide a convenient

5. Deluxe entered into contracts with check cashing organizations early in 1993. This was well after the system had been designed. In early 1993, Deluxe and the Maryland DHR were in the process of converting the last portions of the state to EBT.

6. Other information suggests that the quoted fee of $0.55 per transaction is higher than fees actually paid. Between June and August 1993, the average fee paid to banks for ATM transactions (including balance inquiries and withdrawals) was $0.429 per transaction.

7. According to the contract negotiated with Deluxe Data Systems, the check cashing stores are obligated to process all transactions, with no minimum dollar amount.

location in the neighborhood, and one that is safe, well lighted, and monitored. The check cashers feel that their stores are much safer than the ATMs for customers.

Mr. Satisky's experience with the EBT terminal in his stores has been that the terminal has not increased his business. In fact, he believes he is losing money. He makes approximately $150.00 per month in fees from dispensing money via the EBT terminal. Long lines form at his store on the first, second, and third of the month, when benefits are made available. To handle the demand, the store brings on more staff. Yet many transactions are less than $180 so that no fee is levied.

Despite these drawbacks, Mr. Satisky and the Maryland Check Cashers Association have agreed to accept the current arrangements and carry them out in good faith for one year. During that year, participating check cashers will concentrate on building up the public assistance portion of their business and demonstrating the value of their services. They hope then to renegotiate a more favorable contract with Deluxe.

Check Cashing Store Listings

The evaluation recognized at the beginning that the mere fact that some check cashing stores might go out of business after EBT was implemented would not, by itself, mean that the Maryland EBT system caused these store closings. Store closings could reflect normal rates of turnover, or a general regional or nationwide trend. Accordingly, data were gathered from the 1992-1994 editions of the American Business Directory[8] on the number of check cashing stores in Maryland, Virginia, West Virginia, Delaware, Pennsylvania, and Washington, D.C. The 1992 Directory provides a count of check cashing establishments prior to EBT. The 1993 numbers provide an intermediary measure of impact. The 1994 count reflects activity in 1993, thus affording a more accurate picture of activity following EBT implementation.

As shown in Exhibit 5.3, the comparison of the 1992, 1993 and 1994 counts of check cashing stores in Maryland and surrounding states does not suggest that EBT has had a negative impact on check cashing stores, at least as measured by the number of stores operating in

8. The American Business Directory provides a list of check cashing organizations around the country, based on telephone directories.

Table of Contents

Maryland.[9] As in all surrounding areas except West Virginia, where no check cashing stores operate, the number of check cashing stores in Maryland increased. On a percentage basis, however, the increase in Maryland was relatively low during this period.

EXHIBIT 5.3

CHECK CASHING STORES IN MARYLAND AND SURROUNDING STATES

Year	Maryland	Virginia	West Virginia	Delaware	Pennsylvania	Washington, D.C.
1992	74	39	0	1	221	19
1993	79	52	0	2	230	21
1994	83	56	0	5	258	24
Net change 1992-1994	+9	+17	0	+4	+37	+5
Percentage change	12.2%	43.6%	—	400.0%	16.7%	26.3%

Upon closer examination of the listings, the most significant changes in Maryland appear to have occurred not in the City of Baltimore, but rather throughout the rest of the state. In Baltimore City there was a net increase of one store from 1992 to 1994. However, in the rest of the state the number of stores increased by eight in that same time frame, representing an increase of over 30 percent. The cause of this growth pattern in Maryland is not certain, but it is consistent with a national trend. Recent growth in the CCO industry has been uneven, with especially rapid growth outside of the few major urban areas where check cashing organizations have existed. It has been found that in states, such as Illinois, where check cashers developed early and are well established, the recent growth has been mainly outside the traditional inner-city area. Sources suggest that the trend is related to economic shifts in the 1980s as well as changes in the banking industry.[10] It is not clear that EBT has influenced this pattern.

9. The data, of course, do not address the possible impact of EBT on stores' business volumes or profitability.

10. Caskey, pp. 57-61.

Conclusions

Given the data that we were able to acquire from the follow-up interviews, it is impossible to estimate a dollar impact that EBT has had on the check cashing industry in Maryland. The data suggest some mixed impacts of EBT on the CCOs, not all of which are consistent with the expectations prior to system implementation. Examples of negative effects are the fact that three of nine stores in the pre-implementation survey are out of business, and that the largest chain in Baltimore City closed seven stores and sold nine to a large national chain. However, we do not have evidence that EBT was the main contributor to these business failures. From those owners who are still operating we have testimony of the hardships the system has caused them, but no numbers to support that testimony.

The data we have on the total number of check cashing organizations in Maryland and the surrounding states, however, suggest little or no EBT impact. While EBT was expected to have a negative impact on the industry, the 1993 and 1994 numbers do not reflect such a trend. The American Business Directories show a steady increase in the number of CCOs in all five states with CCOs and the District of Columbia in both years.

Thus, the story is a mixed one. Given the response we received from the stores to our follow-up data collection efforts, it seems clear that the EBT system has not been a popular public policy initiative in the check cashing industry. In fact, EBT has become a topic of concern for check cashers nationwide. As EBT is expanding and new systems are being considered around the country, the National Association of Check Cashers has advised check cashers to get involved with EBT in their areas and to do so early on.[11] They feel that a lesson may have been learned in Maryland, where the check cashers did not become involved with EBT until well after the planning and early implementation of the system.

11. "EBT: Bad News for Check Cashers," *Checklist: A Magazine for Check Cashers*, Summer 1993, pp. 7-10, 33.

CHAPTER SIX

IMPACT OF EBT ON MARYLAND FINANCIAL INSTITUTIONS

Financial institutions participate in the redemption of program benefits in both the paper-based and EBT systems. Under coupon issuance, retailers' depository banks accept food stamp coupon deposits from retailers, then process and forward the coupons to the Federal Reserve Bank (FRB). After receiving the coupons, FRB checks for counterfeits, credits the account of the sending bank, and destroys the coupons. Local banks cash or accept as deposit public assistance checks, entering them into the normal check clearing process used by the banks.

Banks' processing of program benefits under EBT is very different from that of food stamp coupons or public assistance checks. For EBT transactions completed at retailer checkout counters, the system uses FRB's automated clearinghouse (ACH) network to electronically transmit funds from the system operator to retailers' depository accounts. Similar electronic funds transfers are used to reimburse ATM (automated teller machine) owners for cash benefits withdrawn at ATMs by program recipients.

This chapter examines the impact of the Maryland EBT system on financial institutions. Following a discussion of research approach and a summary of evaluation findings, Section 6.2 describes the procedures and costs associated with bank redemption of food stamp coupons. Section 6.3 describes how the Maryland EBT system redeems Food Stamp Program benefits and compares the costs of this EBT redemption process to the costs of coupon redemption. Sections 6.4 and 6.5 parallel Sections 6.2 and 6.3, describing first the process and costs of redeeming public assistance checks and then the process and costs of EBT redemption of public assistance benefits.

6.1 INTRODUCTION

This chapter analyzes the impacts of the Maryland EBT demonstration on a number of different financial institutions. Unlike previous evaluations of EBT demonstrations, the analysis includes impacts arising from the use of the EBT system to deliver benefits for cash assistance programs like AFDC.

The questions addressed in this chapter focus on changes in how benefits are redeemed under the paper- and EBT-based issuance systems, any resulting changes in costs associated with benefit redemption, and how bankers view the change in issuance systems. Specifically, the questions include:

- What is the process by which paper-based benefits in Maryland were redeemed prior to the introduction of EBT? How are benefits being redeemed under EBT? How has EBT changed individual institution's processing responsibilities? What impact did the demonstration have on ATM deployment?

- For the various financial institutions involved, what processing costs arise from the redemption of food stamp coupons and assistance checks? To what degree are costs offset by fees?

- What processing costs are associated with benefit redemption in the EBT system? How do these costs vary by type of financial institution? To what degree are EBT-related costs offset by fees or other charges?

- Does introduction of the Maryland EBT system increase or decrease costs incurred by financial institutions? By how much?

- Which issuance system do financial institution representatives prefer, and why?

Research Method

Sources of Information. The process and costs of food stamp and cash benefit redemption described in this chapter are based on data gathered from a sample of financial institutions in Maryland. We gathered information on food stamp and cash assistance operations from the Maryland headquarters of five commercial banks, three branches of each of these five commercial banks, and FRB. The following five commercial banks, in alphabetical order, were selected as the sample:

- Citizens Bank
- Maryland National Bank
- Mercantile Bank
- Nations Bank
- Signet Bank

In December 1991, these were five of the six largest banks in Maryland in terms of volume of food stamp coupon redemption, and together they accounted for 60.6 percent of the total food stamp coupon redemptions in Maryland for that month.[1] The share of statewide food stamp redemptions for these five banks ranged between 2.9 and 33.7 percent (see Exhibit 6.1). Thus, banks with quite different volumes of food stamp redemptions are represented in the sample.

EXHIBIT 6.1

VOLUME OF FOOD STAMP COUPON REDEMPTIONS OF THE LOCAL BANKS IN THE SAMPLE
(December 1991)

Bank Name	Food Stamp Coupon Redemption Volume	Percent of Total Statewide Redemption
Bank A	$8,948,679	33.70
Bank B	4,373,001	16.47
Bank C	1,187,731	4.47
Bank D	810,477	3.05
Bank E	780,094	2.94
Total of sample	$16,099,982	60.63
All Maryland banks	**$26,556,118**	**100.00**

Source: Bank Monitoring System, Food and Nutrition Service, USDA.

The three sampled branches of each bank were selected by each bank's headquarters staff as representative of the experiences of its branches in the processing of food stamp coupons. Some branches were characterized as "heavy" branches and others as "light," with respect to the volume of food stamps handled by the branch.

To preserve confidentiality, in the remainder of this chapter we identify these local financial institutions only as Bank A, Bank B, and so on, with Bank A having the largest coupon redemption volume and Bank E having the smallest. When we wish to identify specific branches, we say, for example, Branch A1, A2 or A3 for Bank A's three sampled branches.

1. December 1991 was the last month prior to EBT expansion, which started in January 1992. Only the Park Circle district of Baltimore was issuing food stamp benefits via EBT at that time.

Branch A1's coupon redemption volume was greater than Branch A2's volume in December 1991, and Branch A2's volume was greater than Branch A3's volume.

Data Collection Methods. In the pre-implementation data collection, all financial institutions were asked to provide information on check cashing procedures and redemption of food stamp coupons. Officials at the Maryland headquarters of each of the five commercial banks were interviewed in person during the months of June and July in 1992. Information on branch bank procedures and costs was obtained primarily through telephone interviews, although in some cases the bank branches sent the information by mail after being briefed on the questions and sent the data collection instruments. The telephone interviews were conducted during July and August 1992, and the information sent by mail was received in September and October 1992.

During the summer and fall of 1993, the headquarters of the five banks were contacted again to collect information on the impact of the EBT system on their operations. Headquarters staff dealing with ACH and ATM operations were interviewed at each bank, through a combination of in-person and telephone interviews. The three branch offices for each bank were also re-contacted by telephone, except in the case of Bank A whose branches mailed the requested information. Telephone interviews were also conducted with officials of Norwest Bank, Marshall & Isley Bank (M&I), and Crestar Bank, the originating and clearing banks for each EBT settlement process.

In-person interviews were held with officials at the Baltimore office of the FRB of Richmond, where food stamp coupons and checks in Maryland are processed. In addition, officials from FRB were contacted by telephone for follow-up information.

Semi-structured, open-ended interview guides were used to conduct the interviews. Bank personnel also were contacted, as needed, for specific information. Some estimates of the cost of processing public assistance checks were obtained directly from banks based on the banks' internal studies or data from their cost accounting systems. When hard data were unavailable, respondents were asked to provide estimates based on their experience.

Highlights

All five financial institutions in our sample indicated that the EBT system represented a significant improvement over the redemption of food stamp coupons. Several banks noted that

in addition to reducing teller workloads and customer waiting time, food stamp redemption under EBT was much less likely to result in errors. Similarly, the banks in the sample were very positive about the impact of EBT on cash assistance redemption. The branch staff, in particular, appreciated the reduction in lobby traffic, while the banks' main office staff emphasized the revenues generated from new ATM transactions.

The analysis shows that the total net cost to financial institutions to redeem $1,000 in food stamp benefits under the coupon system was $3.78, with local banks fully bearing this cost because FRB fees are cost-based. Under EBT, banks' revenues actually exceed their estimated costs by $0.29 per $1,000 redeemed, largely because banks normally charge retailers for ACH credits to their accounts. Thus, the implementation of the Maryland EBT system improved banks' financial position by an average of $4.07 per $1,000 of food stamp benefits redeemed.

The story is similar for redemption of public assistance benefits. When cashing public assistance checks, banks incurred non-reimbursable costs of $1.88 per $1,000 of cashed checks. Under the EBT system, costs rose somewhat but new revenues were generated; banks charged retail and direct deposit account holders for ACH credits to those accounts, and banks received foreign transaction fees whenever an EBT customer made a cash withdrawal at an ATM. With EBT, net revenues were $1.93 per $1,000 in redeemed benefits, leading to an overall improvement in financial position of $3.81 per $1,000 in benefits.

The levels of food stamp and cash assistance benefits processed by the Maryland EBT system are roughly the same—about $28.0 million in food stamp benefits per month and $30.5 million in cash assistance benefits. The EBT system impacts described above will lead to about $2.8 million annually in net new revenues for Maryland banks, with food stamp and cash program impacts each yielding about $1.4 million in net annual revenues.

6.2 Food Stamp Coupon Redemption

The food stamp coupon redemption process as it applies to Maryland financial institutions may be divided into three distinct stages:

1. Receiving food stamp coupons from retailers and crediting the accounts of these retailers.

2. Processing the coupons—including counting coupons, stamping the Redemption Certificates, and encoding Redemption Certificates—and strapping, bundling and sending the coupons to FRB.[2]

3. Crediting the commercial banks and debiting the USDA for the value of the redeemed coupons.

The first two stages of the process are performed by local financial institutions, including commercial banks, savings and loans, etc. The last stage of the process is performed by the FRB of Richmond. Unlike financial institutions in some other states, financial institutions in Maryland do not participate in the issuance of food stamp coupons.

The Role of Local Banks in the Coupon Redemption Process

This section examines the two principal stages performed by local banks, and discusses the financial institutions' role in the handling of discrepancies and counterfeit coupons.

Receiving Coupons and Crediting Retailers' Accounts. While the essential process of food stamp coupon redemption is the same for all banks, some variation exists in practice. In some banks, food stamps are received from retailers ***only*** at branches. This configuration of the redemption process is described in Exhibit 6.2, below, as Case 1.

In the alternative situation, Case 2 in Exhibit 6.2, food stamps are also received at the collections center of the bank, located at bank headquarters or another central location. When food stamps are deposited by retailers at the collections center, the functions of receiving and further processing are consolidated at the collections center.

Within our sample, Banks C, D and E (the smaller banks) receive coupons from retailers at branches only (Case 1), while Bank B also receives coupons from retailers at its headquarters location (Case 2). The redemption process at Bank A is a variation of Case 2. Bank A, in addition to receiving coupons at branches, uses a central vendor[3] to receive

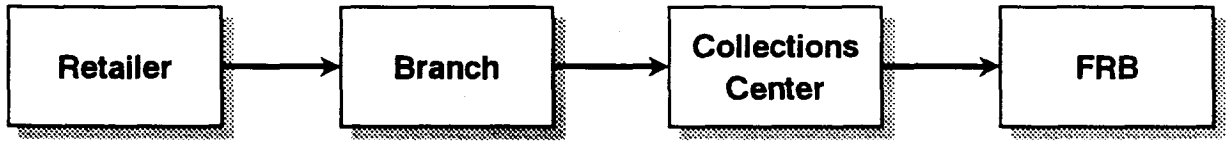
2. Some very small banks must deposit food stamp coupons through a correspondent bank that has an association with the FRB. This study has primarily focused on a sample of large banks in Maryland; however, any additional redemption costs associated with the use of correspondent banks would not be expected to significantly affect the ***mean*** value of food stamp coupon redemption costs experienced by all Maryland banks, given the small redemption volume involved.

3. As used in this analysis, a "central vendor" is an agency hired by the local bank to accept food stamp coupon deposits from retailers. It is not a part of the local bank.

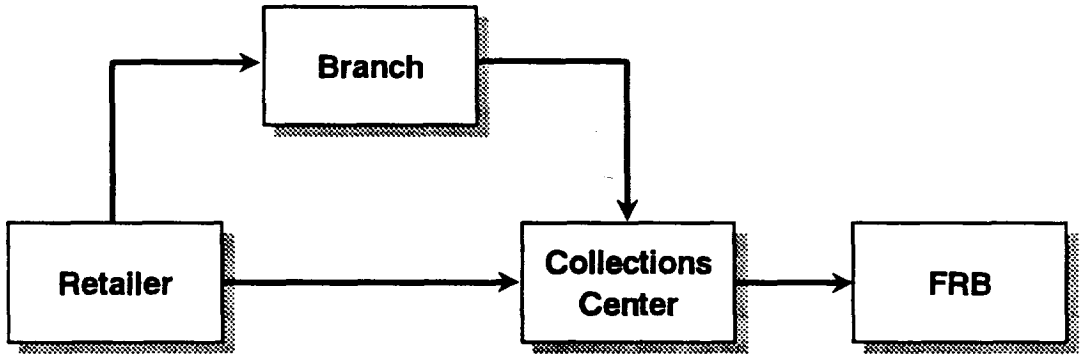
Exhibit 6.2

Food Stamp Coupon Redemption Process

Case 1. (adopted by Banks C, D, and E)



Case 2. (adopted by Banks A and B)



Note: Bank A's Collection Center functions are contracted out to a vendor agency.

coupons. Coupons received at branches are also sent along to the central vendor. Thus, the central vendor in Bank A acts as the collections center for all food stamp coupons.

For this analysis, the ***receiving agency*** (the bank branch, bank headquarters, or central vendor) receives the food stamp coupons deposited by retailers. Retailers are charged a fee for each deposit of coupons; this fee is the standard fee for any deposit.[4] The fee ranged between $0.25 and $0.35 per deposit ticket for the banks in the sample. The retailer is responsible for counting the coupons and bundling them into straps of 100 coupons of each denomination. Lots of less than 100 coupons are packed together separately. Retailers enter the total number of deposited coupons of each denomination ($1, $5 and $10) on the Redemption Certificate (form FNS-278B).

The receiving agency verifies that the retailer validation is on the reverse of the coupons.[5] The receiving agency counts the coupons and verifies that the counted value equals the value on the deposit ticket and Redemption Certificate. The Redemption Certificate is then stamped with the bank teller's stamp. While some branches piece-count only the coupons outside straps, others piece-count all coupons.[6]

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4. Food stamp regulations (at 7 CFR 278.5(a)(1)) stipulate that banks may not charge the retailer for depositing food stamp coupons if the merchant has met the strapping/bundling requirements. However, Maryland banks frequently have a general charge for commercial account deposits, and apply these charges regardless of the nature of the deposit, including food stamps.

5. Retailers are responsible for canceling each coupon on the front with a stamp and writing their name and authorization number on the reverse. In practice, however, retailers sometimes neglect these steps, in which case the receiving agency usually performs them.

The regulatory requirements at 7 CFR 278.4 are that the retailer endorse the coupons, but FNS does not stipulate how the retailers should do it. However, discussions with Maryland financial institutions suggest that banks frequently will tell retailers to use a stamp with the store name and authorization number, and to cancel on the front. The requirement for ***banks*** (per 7 CFR 278.5(c)(3)) is to cancel the coupon on the front, a requirement that some banks apparently attempt to pass on to the retailers even though the regulations indicate that they are not to require such retailer action or charge a fee for it.

6. Branches of Bank A count the number of straps and piece-count the loose (unstrapped) coupons. All coupons received at branches of Bank A are later piece-counted by the central vendor. Branches of Bank B and C piece-count all coupons, including those in straps, by hand. Branch D1 also piece-counts all coupons by hand. Branch D2 counts all coupons; the coupons in straps are counted by a mechanical counter, and loose (unstrapped) coupons are counted by hand. Branch D3 piece-counts only the loose coupons by hand and counts the number of straps. Branches E1 and E2 hand-count all coupons; Branch E3 also hand-counts all coupons, although branch staff use a machine to count deposits involving large quantities of coupons (which is rare for that branch).

Then, after counting the coupons, the receiving agency credits the value of coupon deposits into the retailers' accounts. For some receiving agencies, funds are immediately available to the retailer.[7] In other cases, there is a lag of one working day before funds are available to the retailer.[8]

After crediting the accounts of retailers, the receiving agency combines the loose (unstrapped) coupons from all deposits into straps of one hundred pieces of the same denomination. The Redemption Certificate and coupon deposits are packed in a canvas currency bag, sealed, and sent to the central collections center with other daily work.

Processing at the Central Collections Center of the Bank. The food stamp coupons are sent by branches, affiliates, and the Maryland headquarters of the commercial banks to the central collections center of each commercial bank. The collections center is often located at the headquarters. The coupons are counted and the Redemption Certificates are sent to the proof department, where they are MICR-encoded with the value of the deposit. Any remaining odd lots are combined into straps of 100 coupons each. The straps are further combined into bundles of 1,000 pieces of the same denomination, ten straps making a bundle. Straps of the same denomination are packed together even when they do not make a whole bundle. The bundles, straps and Redemption Certificates are put in a cloth bag along with a completed FNS-521 - Food Coupon Deposit Document, sealed, and sent to the Baltimore office of the FRB of Richmond by courier or runner.

Discrepancies. Discrepancies sometimes occur because a retailer has entered incorrect values on the deposit ticket, that is, the values on the deposit ticket do not match the actual count. This happens most frequently when food stamp deposits have been accepted "subject to count," for example when deposits are made through a night depository. When discrepancies are noticed at the receiving stage, the receiving agency (e.g., a bank branch) notifies the retailer

7. This is the case for banks whose branches are on-line with the central accounting system of the institution, and therefore adjustments to accounts are instantly reflected in the account balance and the funds are immediately available (e.g., an "on-line" deposit can be immediately withdrawn by the account holder).

8. In the case of Bank A, when a retailer deposits coupons with the vendor, funds become available to the retailer the next day, since the vendor does not have an on-line system. Branches of Bank A, however, are on-line and make funds available immediately. The headquarters of Bank B makes funds available immediately to retailers who deposit coupons directly at the headquarters. There is a lag of one working day at the branches of Banks B, C, D and E before funds become available to the retailer, since the branches are not on-line.

and the retailer immediately makes corrections on the deposit ticket and Redemption Certificate. When discrepancies are noticed at the central collections center, they are referred back to the receiving agency in order to make adjustments to the retailer account for the value of the discrepancy.[9]

The value of discrepancies across our sample ranged between several dollars and $1,000 per instance. A one-strap mistake in counting the straps of coupons leads to a discrepancy worth $100 to $1,000, depending on the coupon denomination of the strap. The frequency of discrepancies between the amount of coupons and the amount credited to retailer accounts depends on the frequency of deposits. Banks with larger volumes of food stamp deposits reported more instances of such discrepancies. For example, Bank A reported about 120 such discrepancies in a month, while Bank D reported an average of only two in a month. The discrepancies are usually corrected in a day or two, though in rare cases correction may take up to a month. Clerical staff and supervisors are usually responsible for resolving the discrepancies. They spend between five minutes and five hours per week on this task. The banks incur float costs for the time until the discrepancy is corrected by adjusting the retailers' accounts.

Counterfeit Food Stamp Coupons. In practice, counterfeit food stamp coupons are rarely detected by receiving agencies or central collections centers. When a receiving agency detects counterfeits, the retailer is notified and asked to reduce the amount on the Redemption Certificate by the value of the counterfeit coupons. When counterfeit coupons are detected at the central collections center, the center notifies the receiving agency, which then reduces the credit to the retailer. The counterfeit coupons are sent to the U.S. Secret Service.

Although banks can usually recover the value of counterfeit coupons from retailers, considerable labor time and cost can be expended in dealing with them. There are also some float costs to local banks associated with counterfeit coupons.

9. Only one bank branch in our sample, Branch B2, reported that the bank bore the difference if the amount credited to the retailer was greater than the value of the food stamp coupons deposited by the retailer. The occurrence of discrepancies at this branch was, however, very rare.

Table of Contents

The Costs of Food Stamp Coupon Redemption for Local Banks

Exhibit 6.3 shows the costs incurred by local banks in food stamp coupon redemption activity, standardized per $1,000 of benefits redeemed. They are divided into costs incurred by the receiving agency (such as a bank branch), costs incurred by the central collections center in processing the coupons and sending them to FRB, and the float costs to local banks. The costs incurred by the receiving agency and the collections center include labor costs, fringe benefits, equipment costs and materials costs. The cost of dealing with discrepancies when they arise is also included.

EXHIBIT 6.3

LOCAL BANKS' FOOD STAMP COUPON REDEMPTION COSTS[a]
(per $1,000 of benefits)

Local Bank	Receiving Agency Costs	Collections Center Costs	Float Costs	Total Costs	Revenue	Net Cost
Bank A	$3.08	$0.46	$0.11	$3.64	$0.20	$3.44
Bank B	3.04	0.45	0.10	3.59	0.27	3.32
Bank C	3.55	1.06	0.64	5.25	1.22	4.03
Bank D	4.22	0.63	0.33	5.17	0.58	4.59
Bank E	7.81	1.80	0.38	10.00	0.93	9.07
Bank weighted average	$3.39	$0.57	$0.17	$4.13	$0.35	$3.78

[a] Rows in the table may not always add due to rounding.

Float costs are considered separately. Float costs arising from discrepancies are included in the float cost estimate in Exhibit 6.3.

The revenue to the bank is the charge per deposit paid by retailers, which is a standard fee paid for any deposit. Revenues per $1,000 of benefits will be lower for banks that receive food stamps in large deposits. The net cost to each bank is the total cost *less* revenue.

We see in Exhibit 6.3 that receiving agency costs for the commercial banks in the sample ranged between $3.04 and $7.81 per $1,000 of benefits, with an overall average of

$3.39.[10] Receiving agency costs, standardized per $1,000 of benefits redeemed, tended to be lower for banks with high redemption volume. Banks A and B, which had the largest shares of redemption, also had the lowest standardized receiving agency costs. Bank D and Bank E, each with only about 3 percent of statewide redemption volume, had receiving agency costs that are at the high end of the range. Bank E's low redemption volumes and branch policy of hand-counting all coupons contributed to its high receiving agency costs of $7.81 per $1,000 in coupons.

The collections center costs range between $0.45 and $1.80 per $1,000 of benefits redeemed, with an overall average of $0.57. The standardized collections center costs were lowest for the two banks with the highest food stamp redemption volumes. The collections center cost of Bank C was higher than that of Bank D because the salary level of staff involved in food stamp redemption at Bank C is almost twice that of the staff at Bank D.

Local financial institutions incur float costs when they receive credit from FRB for the amount of food stamp coupons redeemed ***after*** the funds have been credited by the banks to the retailers' accounts. For the baseline period, all float calculations use an interest rate of 3.5 percent, which was the estimate of the typical rate paid to demand deposits in December 1991.[11] Float time is defined as the period between the time that a bank makes funds available to retailers that have deposited food stamp coupons and the time when FRB credits the accounts of the bank and makes funds available to it.

Float costs averaged $0.17 per $1,000 of redemptions, and ranged between $0.10 and $0.64 per $1,000 of benefits redeemed. The float costs were lowest for the two banks with the largest redemption volumes.[12] This is because branches with a higher volume of transactions

10. In computing average costs for the sample, each bank's cost has been weighted by its volume of redeemed food stamps.

11. The actual rate varied both by bank and by type of account, balance, and record of the retailer. The banks indicated that interest ranged between 0 and 4 percent, and that the typical rate paid in December 1991 was roughly 3.5 percent.

12. The float costs to Banks A and B are almost the same. While Bank A's "on-line" branches tend to increase its average float time (because retailers have funds available immediately), the presence of its vendor as a receiving agent offsets this effect because retailers depositing coupons with the vendor do not have funds available immediately. Bank B's on-line credit at headquarters increases its average float time, while its off-line branches (with next day fund availability) reduce its average float time.

forward food coupons to the collections center with greater frequency and shorter time lag. Collections centers with large volumes also forward food coupons to FRB with greater frequency and shorter time lag. Bank C, however, has quite long lead times from the branches to the collections center, which accounts for its having higher float costs than banks with smaller redemption volumes (Banks D and E).[13]

Revenues from the fee per deposit ranged between $0.20 and $1.22 per $1,000 of benefits redeemed. The standardized revenues of the two banks with the largest redemption volumes were much lower than that of the other banks, because the larger banks generally receive high-volume deposits. Bank C, however, has relatively smaller deposits, with a majority of its food stamp depositors being convenience stores. As a result, Bank C had higher revenues per $1,000 of benefits redeemed than the other banks in the sample.

Finally, the net costs to commercial banks in the sample ranged between $3.32 and $9.07, with an overall sample average of $3.78. With the higher revenues to Bank C balancing its higher collections center costs (resulting from higher staff salaries), the net costs to the banks in our sample tended to be lower for banks with higher redemption volumes, and vice versa.

The Role of FRB of Richmond in Food Stamp Coupon Redemption

FRB of Richmond receives food stamp coupons from Maryland, the District of Columbia, and parts of Virginia. The coupons are received at its Baltimore office. Banks with headquarters in Baltimore usually send the coupons by courier, while banks with headquarters outside Baltimore send the coupons by armored vehicle. Approximately 315,000 food stamp coupons are received daily. The bank receives an average of 22 food stamp deposits per day. These coupons have an estimated value of $1,590,000, or about $5 per coupon.

13. For food stamps received at branches, the range of float time was quite wide. The longest average float time in our sample relative to coupons deposited with a branch was 15 days (for Branch C3). The shortest average float time reported in our sample of branches was two days (for Branches A1, A2 and A3). Some branches with very small volumes do not send the food stamps collected by them to the collections center very frequently. Branches with a high volume of food stamp redemption and those located close to the headquarters have shorter float times. The float time also is much shorter for coupons that are deposited by retailers directly at the headquarters or central collections center. The float time for Bank A for coupons received at its collections center (through a vendor) is zero, because funds are made available to the retailer a day after the deposit, and the bank receives credit for the value of the coupons at approximately the same time. The float time for coupons deposited by retailers at the headquarters of Bank B is one day.

After bulk-counting the straps of coupons, FRB credits the banks making the coupon deposits on the same day that FRB receives them. The coupons generally are received in bundles of 1,000 pieces, although incomplete bundles are also accepted. A sample of about 20 bundles of coupons is piece-counted. If the count is correct, the coupons are stored in a vault for approximately 30 days and then destroyed in an incinerator. If the count is not correct, the entire lot consisting of 500 to 1,000 bundles is piece-counted. Cases of confirmed discrepancies in the count are reported and the credit to the bank is adjusted.

Redemption Certificates are passed through a low-speed sorter. In cases where the MICR encoding is not readable by the machine, the values on the Redemption Certificates are entered by a staff member. The Redemption Certificates and the deposit tickets are reconciled, and the reconciliation is transmitted through the Bulk Data System to FRB of Minneapolis. The USDA Treasury Account is debited for the amount of redeemed food stamps through the Fiscal Agency Department of FRB of Richmond. These steps are performed daily. The Redemption Certificates are microfilmed and the microfilms are mailed to FRB of Minneapolis once a week.

Discrepancies. Discrepancies between the value of food coupons deposited at FRB and the amount credited to a bank's account are rare. Most banks in our sample reported that such discrepancies occur about once a year. Bank A, however, reported encountering such discrepancies about 25 times a year. The very high redemption volume of Bank A presumably explains this more frequent occurrence. The time taken to correct the discrepancy is usually between one and ten days, although in rare instances it takes as long as three to four months. Since FRB credits banks by the amount stated on the Redemption Certificate, there are no float costs to local banks resulting from such discrepancies.

Counterfeits. All food stamp coupons deposited with FRB are passed under ultraviolet light in order to detect counterfeits. FRB debits the accounts of banks for the value of

counterfeit stamps.[14] The counterfeit coupons are then turned over to the U.S. Secret Service.[15]

The Costs of FRB in the Redemption of Food Stamp Coupons

FRB of Richmond incurs several costs in the processing of food stamp coupons. These costs include the direct cost of labor, equipment and materials in the processing of coupons, and also the cost of searching for marked and counterfeit coupons and co-operating with the U.S. Secret Service and law enforcement agencies. The cost of processing food stamps is carefully tracked by FRB's cost accounting system. The cost of processing $1,000 worth of benefits, based on cost accounting data of FRB of Richmond, was $0.51. Approximately 60 percent of this cost is attributed to direct costs, and the remaining 40 percent to support costs. Exhibit 6.4 summarizes these costs.

FRB is reimbursed by FNS for the entire cost it incurs in processing food stamp coupons, with the exception of certain overhead costs such as the cost of recruitment of personnel to process food stamps. Thus, not considering these minor overhead costs, the net cost to FRB is zero.

EXHIBIT 6.4

FEDERAL RESERVE BANK
FOOD STAMP COUPON REDEMPTION COSTS
(per $1,000 of benefits)

Cost Element of FRB	Cost per $1,000 of Benefits
Direct costs	$0.31
Support costs	$0.20
Total cost	**$0.51**

14. The local bank whose account is debited for the value of the counterfeits is able to trace the coupons to the retailer who deposited them, since the name of the retailer is written or stamped on the coupon. The bank adjusts the retailer's account by the value of the counterfeit coupons.

15. The incidence of counterfeits is extremely sporadic. However, when counterfeit coupons enter the system they do so in large numbers and represent very high values. The FRB of Richmond had not detected any counterfeits for at least two years before the time we interviewed them for baseline information (July 1992). In October 1992, however, a spate of counterfeits was detected at the FRB of Richmond, in the value of thousands of dollars.

6.3 EBT Redemption of Food Stamp Benefits

This section begins with a brief overview of the EBT food benefit redemption process. This process is illustrated in Exhibit 6.5. In subsequent parts of this section, the procedures relating to individual components of this process are described in greater detail.

Under the Maryland EBT system, eligible food stamp recipients use their Independence cards to access benefits at FNS-certified food retailers. At the point of sale, food stamp transactions are sent to the processor, Deluxe Data Systems (Deluxe), as either an electronic message through the retailer POS terminal device or as an off-line transaction through the Voice Authorization Center. All transactions are logged by Deluxe. Once each business day, at 5:00 p.m. Eastern Standard Time, Deluxe totals the transactions and creates an Automated Clearing-house (ACH) file with deposits for each retailer for the net credit due to the food retailer.[16] Deluxe then transmits the ACH deposits for all retailers to an ***originating bank***, Norwest Bank in Minneapolis, in time to make FRB's overnight ACH cutoff.

When Norwest receives the ACH file (the deadline is 9:00 p.m. Central Time, but Norwest usually receives the file before 6:00 p.m.), it completes several reviews, pre-sorts the file, and transmits it to FRB in Minneapolis.

Overnight, the FRB ACH system regroups all of the ACH files that it has received into transmissions for the destination banks. As part of this process, FRB debits and credits the various bank accounts to settle money moved between banks. An ACH credit transmission is sent to each retailer's local bank for the start of business on the next business day.

After having transmitted ACH files to the individual retailer banks, FRB sends a transmission to a ***settlement bank***, M&I in Minneapolis, to debit Deluxe's EBT ACH Settlement Account at that bank for the net amount due to the retailers' financial institutions.

When the retailers' ***local financial institutions*** receive the FRB ACH transmission in the morning, they review the files and post the ACH deposits to the retailer accounts according to the bank's posting schedule. This posting generally occurs overnight, with the deposited funds available to the retailer on the next business day.

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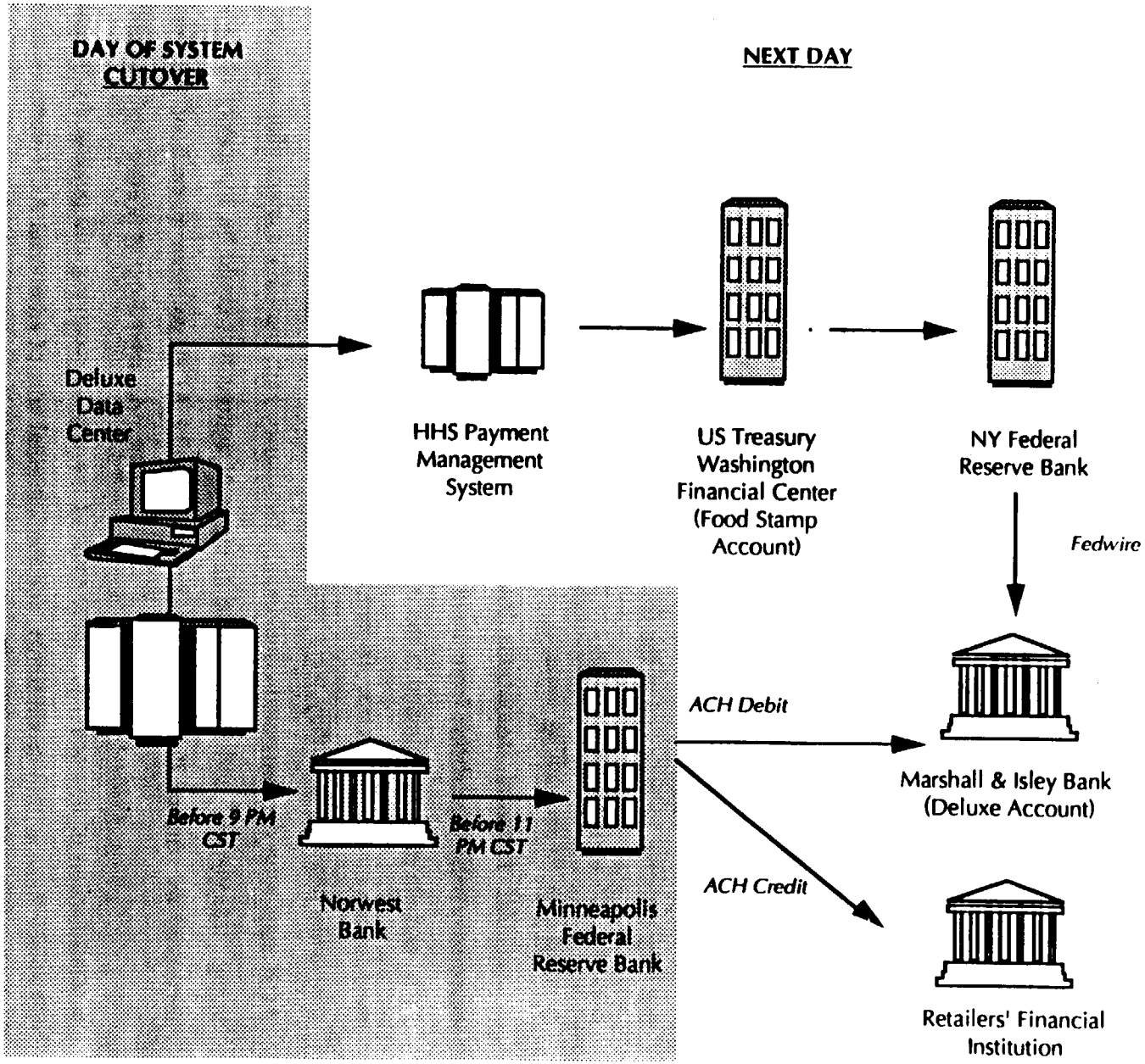
16. If a retailer's end-of-business day coincides with the 5:00 p.m. cut-off, all the retailer's food stamp transactions for that day will be reflected in the Deluxe ACH file that night. If the retailer's business day ends after 5:00 p.m., all of its transactions for the day will be included in the Deluxe ACH file ***on the following night***.

Exhibit 6.5

POS - Food Stamp Settlement



To replenish the Settlement Account at M&I, Deluxe initiates a request for reimbursement funding for the net amount paid to retailers. This transaction is processed through the U.S. DHHS' Payment Management System (PMS), the U.S. Treasury's Washington Finance Center, and the New York FRB. M&I receives a Fedwire transfer of funds from FRB, and credits these funds to the Deluxe Settlement Account.

The Role of Local Banks in EBT Settlement for Food Benefits

Under the Maryland EBT system, the role of a ***local*** financial institution in food stamp benefit settlement principally entails receiving and processing electronic ACH credits for retailers having accounts with the bank who have sold grocery items to eligible recipients. The EBT redemptions are processed through each bank's ***existing*** system for receipt and posting of ACH items from FRB. Each bank in our sample receives thousands of such ACH items each day, in as many as four transmissions daily. All of the banks in this study receive the ACH items through telecommunication transmissions that are routed through FRB of Richmond, although the files can also be received in the form of magnetic tapes and hard-copy printouts. The ACH files are then reviewed and entries are posted to customer accounts through the banks' automated demand deposit accounting systems.

All financial institutions interviewed indicated that the EBT-related items were essentially indistinguishable from the other transactions contained in the ACH files received from FRB, and the process followed in the receipt and posting of EBT deposits was identical with that used for the other ACH items. In fact, some ACH personnel in the sampled banks revealed that they were unaware that they were receiving EBT-related credits for customer accounts. Even ACH staff who demonstrated considerable familiarity with the EBT system characterized it as being "transparent" and indiscernible in terms of actions that could be separately observed or measured as part of their ACH operations. Daily ACH volumes at each of the financial institutions were large, with the banks estimating that the EBT-related portion represented only a small faction of this activity. Since most of the cost of receiving and posting ACH credits is relatively fixed within broad limits, and the marginal cost of additional ACH items is minimal,

none of the banks felt any need to identify or track the comparatively small marginal volume of activity represented by the EBT items.[17]

Costs of Food Stamp EBT Settlement for Local Banks

Although the local banks in our sample did not themselves track the costs of EBT redemption, estimates for this activity can be calculated. Exhibit 6.6 presents our estimate of costs of EBT redemption for local financial institutions in Maryland, per $1,000 of food benefits. Potential sources of expenses for this function include capital costs, operating costs, float costs, and accounting error costs. For some banks, expenses associated with EBT redemption are offset by reimbursement that the banks receive as the result of charges passed along to customers for ACH deposits.

Because EBT-related ACH item processing was integrated with each bank's regular system for handling ACH activity and represented only a small marginal increase in volume, none of the banks in our sample were required to add equipment or software specifically in response to EBT implementation.[18] Therefore, no capital costs were experienced.[19]

Data from the Maryland EBT processor and DHR reveal that during the three-month period of June through August 1993, the Maryland EBT system was responsible for initiating 288,810 ACH credit items to stores, involving a cumulative value of $82,575,561 in food stamp benefits and $22,686,456 in POS cash benefits. (The Maryland system processor does not

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17. One bank official reported that it might be possible to separately identify EBT-related ACH items by tracing back to their source of origination (the EBT processor), but indicated that as a practical matter the bank never pursued such a course of action.

18. One financial institution in our sample, Bank D, switched in July 1993 from receiving a tape copy of the ACH file (via courier from the Baltimore office of FRB) to receiving telecommunications transmissions through FRB of Richmond. The bank added a personal computer to its ACH operations (at a cost of $18,000) in order to receive and be able to extract the files off the FRB telecommunications transmissions; these files were then uploaded on the bank's mainframe for editing and posting. However, the bank staff characterized the switch to telecommunications transmission and the addition of the PC as a decision made independent of the implementation of EBT.

19. Even though no financial institutions were required to add equipment to process EBT ACH items—and therefore there were no ***marginal capital costs***—it could be argued that there is still an ***average capital cost*** associated with the EBT ACH activity since existing equipment capacity was being used up. However, the small size of the EBT volume relative to the total ACH activity of the local banks, and the period over which the banks' capital costs are amortized, suggest that the average EBT-related capital costs are too small to be significant for this analysis. Consequently, the capital costs were assumed to be zero.

EXHIBIT 6.6

LOCAL BANKS' EBT FOOD STAMP BENEFIT REDEMPTION COSTS AND REIMBURSEMENT
(per $1,000 of benefits)

	Amount
Cost Element	
Capital costs	$0.000
Operating costs	
FRB ACH fee	$0.041
Other operating costs	$0.123
Float costs	$0.000
Accounting error costs	$0.000
Total cost	$0.164
Reimbursement	
Deposit charge to customers	$0.406
Total reimbursement	$0.406
Net Cost to Local Banks	-$0.242

distinguish between ACH items for POS cash benefits as opposed to food stamp benefits; the processor notes that any retailer with transactions on a particular day would receive a single ACH item that would combine both the cash and food stamp activity for that day.) This volume results in an average of approximately $364.47 in credits per ACH item. Receiving banks in the Richmond district are charged $0.015 per item by FRB for receiving interregional transmissions; since all Maryland EBT ACH items are routed to FRB of Minneapolis for settlement, they are all billed by FRB as interregional. This translates into an ACH fee of approximately $0.041 per $1,000 in food benefits.[20]

20. In addition, receiving banks are assessed a charge of $1.50 per file. Since Maryland financial institutions receive EBT items in the morning FRB file transmissions, with an average of 22 business days a month, it can be estimated that over the three-month period of June through August 1993, a total of 330 files would include EBT items for the five banks. This would mean a cumulative file charge of $495 over the three months. If EBT items are assumed to represent no more than 5 percent of total ACH items, and the five banks represent approximately 60 percent of EBT-related ACH items, this would translate into a per-EBT ACH item fee of $0.00014, or $0.00039 per $1,000 in food benefits. This marginal cost is seen as too small to be significant to this report's cost analysis for financial institutions, and was not included.

Three of the five banks in our sample indicated not only that they lacked the ability to identify the costs of EBT-related ACH processing, but also that they had no overall estimate of the typical cost for receipt and processing of an ACH item. The other two banks, while similarly unable to distinguish ACH processing costs specific to EBT activity, did provide information on the average cost of receipt and posting of an ACH item, resulting in an estimate of $0.045 per item.[21] This translates into $0.123 in other operating costs for every $1,000 in food benefits.

As previously noted, the receiving banks reported that they post the ACH credits through their DDA to the individual retailer accounts overnight, usually within 12-18 hours of receipt of the FRB ACH transmission. Accordingly, since a retailer does not have access to these funds until the business day following its bank's receipt of the credits from FRB, local Maryland banks incur no float costs relative to this component of the EBT system.

The local banks in our sample also reported that accounting errors related to ACH transmissions from FRB were rare. They each reported experiencing less than a half dozen calls ***per year*** from retailers regarding incorrect ACH deposit amounts relative to their overall ACH credits (of which EBT activity may represent from less than 1 percent to no more than 5 percent). The most common ACH-related problem experienced by the banks was incorrect numbers for retailer accounts, the frequency of which appeared to be minimized through utilization of a prenotification procedure (a zero-dollar ACH entry to test the account name and number). According to the banks, comparatively few cases of incorrect account numbers are

21. One of the financial institutions provided an estimate that translates into a per-ACH item operating cost of $0.025 (net of FRB fees); this estimate was based on a nationwide internal study conducted by the bank. A second Maryland bank provided a rough estimate of $0.045 per item (net of FRB fees) based on a review of its own operations. These estimates were shared with a representative of the Mid-Atlantic Clearinghouse Association (MACHA). Although the MACHA representative indicated that he did not have any systematic empirical data on ACH costs in Maryland banks, based on his experience he estimated the costs of receiving an ACH item (net of FRB fees) as typically falling in the range of $0.045 to $0.05 per item.

not caught by the "pre-note" procedures,[22] and they report that resolving such cases requires only a nominal amount of staff time.[23]

The sum of these expense elements results in an estimate of an average of $0.164 in ACH processing costs for every $1,000 of food benefits redeemed, as shown in Exhibit 6.6.

Some Maryland financial institutions recoup these costs by charging their commercial customers for ACH deposits, although this practice appears to vary widely among the financial institutions studied. Banks A and C in the sample do not charge anything for ACH deposits to customer accounts.[24] Deposit charges per ACH item varied considerably among the three remaining banks, with Bank D charging $0.09 per item, Bank E charging $0.30 per item, and Bank B charging $0.35 per item. In all cases where a deposit fee was applied, the bank staff made a point of noting that the rate cited was the "standard" fee charged, but was subject to negotiation according to the type of commercial customer.[25]

If the simple average of the deposit charges among the five banks of $0.148 per ACH deposit is used to calculate "typical" reimbursement, Maryland financial institutions receive an average of $0.406 in deposit fees for every $1,000 in food benefits. This reimbursement results

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22. For example, one bank indicated that as the result of its pre-note procedures the institution experienced fewer than two invalid account numbers per week for all ACH activity.

Only one of the five sampled banks (Bank D) volunteered that it does not regularly employ a prenotification process to test account numbers. The bank official who was interviewed regarding Bank D's ACH operations reported that approximately 100 ACH items per day were rejected because of incorrect account names and numbers. However, this official indicated that the majority of these "rejects" were debits, and only a small fraction of the rejects that were credits would be attributable to EBT.

23. For ACH items that are rejected by the bank's DDA because of invalid names or account numbers, the bank staff will consult its account records to determine if the correct name or account number can be identified and resubmit the credit for DDA processing, or will notify the originator that the latter must re-initiate with a correct account identification. The procedures for processing rejected ACH items were estimated to take approximately 5-7 minutes per case.

24. Although two of the banks in our sample did not impose ACH deposit fees, the Maryland EBT processor reported that the trend is for financial institutions to charge their customers for such deposits.

25. It is also interesting to note that the fee schedule for these deposit charges does not appear to be necessarily related to the financial institution's costs for processing the ACH items. The two banks that had estimates of their per-ACH item processing costs were also the two financial institutions that did not charge their Maryland commercial customers for ACH deposits. In addition, the staff of the bank charging an ACH fee of $0.30 reported that this was the standard fee charged for ***any type of deposit*** to a commercial account. Several bank personnel also indicated that it was the marketing department of their bank that set the basic structure for such fees.

in a net average revenue to the local financial institutions of $0.242 per $1,000 of food benefits redeemed.

The Role of Originating and Settlement Banks in EBT Food Stamp Benefit Settlement

Originating Bank. Because access to the ACH system is restricted to Federal Reserve member banks, the EBT processor (Deluxe) must utilize a third party to originate its ACH transmissions. The Maryland EBT system utilizes Norwest Bank of Minneapolis as its ***originating bank*** for initiating redemption of food benefits.

Deluxe creates the food benefit redemption file in an ACH-ready format to minimize the need for further processing. For the ACH credits to retailers, each record contains the name of the local bank holding the retailer's account, a routing number at the bank, the retailer's account number, and the amount of the credit. Deluxe also includes an offsetting debit for M&I for the total amount of credits being sent to retailer accounts. Deluxe then transmits the ACH file to its parent corporation in Minnesota, Deluxe Corporation, which passes it on to Norwest through a leased telecommunications line.[26]

Normally, Norwest receives the EBT ACH file from Deluxe Corporation before 6:00 p.m. Central Time. Norwest then performs a few minor processing steps. First, the file is reviewed to ensure that settlement dates have been entered.[27] Then Norwest runs the ACH file through an archiving process that retains the data for 20 days in case items are returned. Next, the file is examined to determine if any items are routed to non-ACH banks, and is checked for any "on us" accounts (which are extremely rare). Norwest then compares the sum

through an encrypted leased line to FRB in Minneapolis.[28] The ACH file is received by FRB before the latter's 11:00 p.m. cutoff.

Exhibit 6.7 presents the costs associated with Norwest's processing of the ACH items in its role as originating bank for the EBT system. As indicated above, except for checking the settlement date, the steps that Norwest follows in originating the EBT ACH transmission are the same as its procedures for hundreds of other ACH files which are processed each day. Norwest estimates that its costs for processing ACH overnight inter-regional items averages approximately $0.0249 per item, or $0.068 per $1,000 of food stamp benefits redeemed. This total cost is due to FRB fees and other operating expenses of Norwest. FRB charges an origination fee of $0.012 per ACH item (because they are presorted interregional items), plus $1.50 per file. The other operating expenses incurred by Norwest include internal processing and overhead costs, plus a percentage of the monthly costs of the dedicated leased line. Norwest incurs no float.[29]

The fees that Deluxe pays to Norwest for the latter's services as originating bank for the EBT food stamp benefit redemptions are $0.0409 per inter-regional overnight item, or approximately $0.112 per $1,000 of benefits redeemed. Therefore, the originating bank receives net revenue of $0.044 for processing $1,000 worth of food stamp benefits.

Settlement Bank. Under some EBT systems (e.g., those operating in New Mexico and Ramsey County, Minnesota), the same financial institution serves as both ACH originating bank and settlement bank. Under the Maryland EBT system, however, Deluxe separates these functions between two different financial institutions. As ***settlement bank*** for POS food stamp transactions, Deluxe utilizes M&I of Minneapolis.[30] FRB of Minneapolis transmits to M&I a debit for the net amount of ACH retailer deposits that have been processed for that day in

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28. If for any reason the telecommunications lines fail, a Norwest employee can carry a magnetic tape version of the ACH file to FRB, which is located only a few blocks away.

29. When FRB receives Norwest's ACH transmission crediting the retailer accounts, it debits Norwest for the total amount; then, when FRB debits M&I for this amount, it issues an offsetting credit for Norwest. Under the current procedures, because the Norwest debit and credit occur the same day, there is no float. However, in August 1994 FRB will institute charges for member banks for any ***intra-day overdrafts***, a situation that Norwest may be at risk of incurring because of the lag of two and a half hours between its EBT-related debit and credit (since FRB transmits the EBT credits to financial institutions at 8:30 a.m. ET and does not debit M&I until 11:00 a.m. ET).

30. As will be discussed in Section 6.6, M&I also serves as settlement bank for Maryland's POS and direct deposit ***cash transactions*** under the EBT system.

Table of Contents

EXHIBIT 6.7

ORIGINATING BANK EBT FOOD STAMP BENEFIT REDEMPTION COSTS AND REIMBURSEMENT
(per $1,000 of benefits)

	Amount
Cost Element	
Capital cost	$0.000
Operating cost	
FRB Fees	$0.034
Other operating costs	$0.034
Float cost	$0.000
Total cost	$0.068
Reimbursement	
Fee paid by Deluxe	$0.112
Total reimbursement	$0.112
Net Cost to Originating Bank	-$0.044

Note: The average value of an ACH item is $364.47.

connection with EBT food stamp benefit transactions, and M&I posts this debit to the Deluxe Settlement Account.

To replenish the food stamp benefit Settlement Account held by M&I, on the morning after submitting the retailer credit file to Norwest Bank Deluxe initiates a SmartLink transaction with the DHHS PMS. After receiving Deluxe's request for funds, DHHS PMS verifies the availability of funds in Maryland's Food Stamp Letter of Credit, certifies the payment, and sends a payment voucher via telefax to the U.S. Treasury Department's Washington Finance Center (WFC). WFC in turn authorizes the New York FRB to issue a Fedwire transfer of funds to M&I. Normally, the transfer of funds from the Letter of Credit to M&I via the Fedwire system occurs on the same day that the request for reimbursement is initiated. Upon receiving notification regarding the transfer of funds, M&I credits the Deluxe Settlement Account for the amount of the ACH retailer deposits.

The total cost for M&I to act as the settlement bank for the Maryland EBT food benefit system is $0.003 per $1,000 in benefits. This is due to FRB fees of $0.001 per $1,000 in benefits redeemed, and $0.002 in other direct operating costs. M&I does not incur any float

costs relative to its role as settlement bank because the Fedwire transfer to replenish the Settlement Account is received the same day as the FRB debit of that account. As settlement bank, M&I charges Deluxe a fee of $0.005 per $1,000 in benefits. As shown in Exhibit 6.8, for its role as settlement bank for food stamp benefits, M&I realizes an estimated net revenue of $0.002 per $1,000 in benefits redeemed.

EXHIBIT 6.8

SETTLEMENT BANK EBT FOOD STAMP BENEFIT REDEMPTION COSTS AND REIMBURSEMENT
(per $1,000 of benefits)

	Amount
Cost Element	
Capital costs	$0.000
Federal Reserve bank fees	$0.001
Other operating costs	$0.002[a]
Float costs	$0.000
Total costs	$0.003
Reimbursement	
Fee paid by Deluxe	$0.005[b]
Total reimbursement	$0.005
Net cost to settlement bank	-$0.002

[a] This figure is composed of the expenses (other than FRB fees) associated both with the receipt and posting of ACH debits, and with the receipt of the wire transfers from the New York FRB and the posting of these credits to the Deluxe EBT Settlement Account. The settlement bank provided a general estimate for its costs related to the receipt of wire transfers of $2 to $3 per transfer, and was able to indicate a range of costs typically experienced for processing a debit or credit of approximately $0.08 to $0.10 per item (although it did not have a breakdown for the costs specifically associated with handling *ACH* debits).

[b] M&I charges Deluxe $6 per wire transfer plus a flat monthly account maintenance fee of $15.00. M&I's standard account fee is $.45 per transaction, but it charges Deluxe the lower flat fee because of the volume of business between the two entities.

The Role of FRB in the Settlement of EBT Food Stamp Benefits

FRB in Minneapolis processes ACH items, such as those received from the EBT originating bank, on a daily basis. First, through merging the ACH files received, FRB creates a master file of all ACH items that is organized by the originating bank. Then, this main file

is sorted to create files for each bank that will be receiving ACH items. These files are then sent to the appropriate banks. In the case of all of the Maryland banks in our study, the file transfers occur through telecommunications transmissions routed through the Richmond office of FRB, although it is also possible for FRB to provide the files in the form of magnetic tapes via courier. Any individual Maryland bank may receive thousands of ACH items per day from FRB, with generally only a small fraction of this volume representing EBT-related items. The receiving banks then electronically post the credits from the ACH file to the retailer accounts, as described at the beginning of Section 6.3.

In establishing its fee schedule for processing of ACH items, FRB follows a policy of cost-based pricing. The standard cost for its members for originating or receiving intra-regional ACH credits is $0.01 per originated item, and for interregional credits is $0.015 per item ($0.012 per item if the file is presorted by receiving Federal Reserve office).

Although the cost-based pricing policy means that the net expense of ACH item processing to FRB is zero (see Exhibit 6.9), this component of the system is included in the EBT cost analysis to demonstrate the relative contribution of FRB fees to overall costs.

EXHIBIT 6.9

FEDERAL RESERVE BANK EBT FOOD STAMP BENEFIT REDEMPTION COSTS AND REIMBURSEMENT
(per $1,000 of benefits)

Total costs for EBT-related food stamp benefit redemption	$0.076
Total reimbursement for EBT-related food stamp benefit redemption	$0.076
Net cost to Federal Reserve Bank	$0.000

Comparison of Overall Costs to Financial Institutions for Food Stamp Redemption Under the Paper-Based System and the EBT System

Exhibits 6.10 and 6.11 compare the costs to financial institutions of food stamp benefit redemption under the paper-based coupon system and the EBT system. Exhibit 6.10 presents the comparable figures for ***total costs*** for the financial institutions per $1,000 of benefits redeemed. From this analysis, it can be seen that the EBT system represents an overall total

cost savings for the financial institutions of $4.33 per $1,000 of benefits redeemed. The bulk of these total cost savings are realized by the local banks.

Exhibit 6.11 factors in the reimbursement that the various financial institutions receive as fees or other revenues related to their food stamp benefit redemption activities. Under both systems, FRB incurs no ***net costs***, due to its cost-based fee structure. However, the local banks (on average) and the originating and settlement banks each achieve a negative net cost under the EBT system. As a result, when such fees and revenues are considered, an overall ***net savings*** of $4.07 per $1,000 of food stamp benefits redeemed is realized by financial institutions under the EBT system as compared to the coupon-based system. Given monthly food stamp redemption levels of approximately $28 million in Maryland, this net savings per $1,000 of benefits redeemed translates into annual net savings of nearly $1.4 million.

Comparison of Maryland EBT Food Stamp Benefit Experience with Estimates from Previous EBT Evaluations

The comparative costs to financial institutions in redeeming food stamp benefits under the paper-based system and the EBT system have been estimated in previous evaluations. Exhibit 6.12 summarizes these estimates and the estimates in Maryland from the present evaluation. From this comparison it can be seen that the overall savings experienced by Maryland financial institutions are consistent with the savings found in similar studies in New Mexico and Ramsey County, Minnesota.

Financial Institutions' Views on the Impact of EBT on Food Stamp Benefit Redemption

Although the level of familiarity with the EBT system varied considerably among interviewed bank personnel, all five local financial institutions that were studied perceived that the EBT system represented a significant improvement over the coupon-based food stamp redemption system. While the deposit of food stamp coupons has not been eliminated altogether, bank personnel consistently reported that the volume of coupons has been reduced dramatically,

EXHIBIT 6.10

SUMMARY OF TOTAL COST TO FINANCIAL INSTITUTIONS OF FOOD STAMP BENEFIT REDEMPTION UNDER COUPON AND EBT SYSTEMS

(per $1,000 in benefits)

	Estimated Cost		
Financial Institution	**Coupon**	**EBT**	**Difference**
Local banks	$4.13	$0.16	-$3.97
Originating and settlement banks	N/A	$0.07	$0.07
Federal Reserve Bank	$0.51	$0.08	-$0.43
Total cost	**$4.64**	**$0.31**	**-$4.33**

EXHIBIT 6.11

NET COST (AFTER REIMBURSEMENT) TO FINANCIAL INSTITUTIONS OF FOOD STAMP BENEFIT REDEMPTION UNDER COUPON AND EBT SYSTEMS

(per $1,000 of benefits)

	Estimated Net Cost		
Financial Institution	**Coupon**	**EBT**	**Difference**
Local banks	$3.78	-$0.24	-$4.02
Originating and settlement banks	N/A	-$0.05	-$0.05
Federal Reserve Bank	$0.00	$0.00	$0.00
Total net cost	**$3.78**	**-$0.29**	**-$4.07**

Table of Contents

EXHIBIT 6.12

CROSS-SITE COMPARISONS OF NET COSTS OF FOOD STAMP BENEFIT REDEMPTION FOR FINANCIAL INSTITUTIONS

(per $1,000 of benefits)

Financial Institution	Evaluation Site		
	Ramsey County	New Mexico	Maryland[a]
Estimated Net Costs Under Paper-Based (Coupon) System			
Local banks	$5.52	$3.29	$4.13
Concentrator bank	N/A	N/A	N/A
Federal Reserve Bank	$0.00	$0.00	$0.00
Overall net costs for coupons	$5.52	$3.29	$4.13
Estimated Net Costs Under EBT System			
Local banks	$0.04	$0.12	-$0.24
Concentrator bank	-$0.15	-$0.02	-$0.05
Federal Reserve bank	$0.00	$0.00	$0.00
Overall net costs for EBT	-$0.11	$0.10	-$0.29
Estimated Differences in Net Costs Between Paper-Based System and EBT System			
Local banks	-$5.48	-$3.17	-$4.37
Concentrator bank	-$0.15	-$0.02	-$0.05
Federal Reserve Bank	$0.00	$0.00	$0.00
Overall difference in net costs	-$5.63	-$3.19	-$4.42

[a] In order to permit comparison with earlier EBT studies, the Maryland figures for the net costs to local banks for food stamp ***coupon*** redemption excludes the revenue associated with deposit fees, since earlier studies did not include such a revenue component. As a result, the Maryland figures in Exhibit 6.12 do not agree with those in Exhibit 6.11. Also note that for this exhibit, the Maryland figures for the originating bank and settlement bank are shown under the category of "concentrator bank."

with all banks indicating at least a 50 percent decrease, and many individual branches reporting a reduction in coupon activity of 75 to 90 percent.[31]

Because under EBT most of the food benefit redemption is handled electronically, the decline in food stamp coupon volume has resulted in a concomitant decrease in the local banks' administrative procedures and paperwork. Local branches' staff costs for counting, batching and reconciling coupons are reduced. Since coupon deposit transactions are very time-consuming, the decline in this activity means that teller windows can assist other bank customers more quickly. The banks' costs of transport of coupons by courier to FRB have also been reduced.

In addition to less work for tellers, several banks noted that the EBT system was much less likely to result in errors. As mentioned previously, problems with ACH transmissions are uncommon, and are primarily concerned with incorrect account numbers that can be largely eliminated through pre-note procedures. Moreover, because the food benefit credits follow the standard ACH format and account for a very small percentage of ACH volume, it is hard for the banks to even detect whether any rejects represent a pattern specific to EBT items. As a result, some bank staff characterized the implementation of EBT as a "non-event" from the standpoint of their ACH operations, although a positive development for their institution overall.

6.4 Redemption of Public Assistance Checks

The Role of Local Banks in Redemption of Public Assistance Checks

Local banks cash public assistance checks for recipients and accept deposits of such checks into recipients' accounts. Banks also receive deposits of cash assistance checks from retailers who have either accepted the checks from recipients as payment for goods or have simply cashed them. The Maryland Alliance for Responsible Investment (MARI) Agreement enables Maryland residents, both accountholders and non-accountholders, to cash government

31. The disparity between the branches and overall bank experience in the reduction in coupon activity may stem in part from the fact that some of the banks' main offices (or central vendor) receive coupons directly from large commercial customers, which include food chains that have stores located outside Maryland. For example, at Bank A the overall coupon volume declined 53 percent between September 1992 and June 1993; over this same period, the number of coupons and dollar value of food stamp redemption at branches went down 88 percent, but the number of coupons and dollar value from commercial customers depositing directly at the central vendor declined by only approximately 23 percent (and the number of commercial customers depositing coupons increased by 61 percent, from 157 to 253).

checks free of charge at commercial banks provided the payee presents two forms of identification. Banks usually require one ID to be a State of Maryland photo-ID containing the signature of a state official and the recipient. The bank teller is required to record the photo-ID number on the back of each check in order to avoid bank liability for fraudulent checks. Finally, additional restrictions may apply for certain public assistance checks—for example, State of Maryland Child Support checks can be cashed only in the county designated on the recipient's ID card.

Public assistance checks are processed like any other check except that, for public assistance checks, funds are always made available immediately. When a recipient chooses to cash a public assistance check at a bank, the cash is immediately available to the recipient. When a recipient chooses to deposit a public assistance check into his or her own bank account, a special deposit ticket is used by the bank to ensure that the funds are available for withdrawal from the account the next day. No hold is placed on the deposited check for any period.

Branches send the checks for processing to the central proof departments of their respective banks, which are often located at bank headquarters. The proof departments generally also process checks from banks in Washington, D.C. and parts of Virginia, in addition to checks from Maryland banks. At the proof department, public assistance checks are processed exactly like other checks. The checks are MICR-encoded with the dollar amounts on the checks. The checks are then run through a high-speed reader-sorter. The transactions are balanced and cash transfer letters are made out to banks on which the checks are drawn. The checks are then sent to a clearinghouse for clearing.

The Role of the Clearinghouse in Public Assistance Check Redemption

Public assistance checks deposited at local banks are sent for clearing either to the local Baltimore-Washington Clearinghouse or to FRB. Using the Clearinghouse to clear local checks is cheaper and quicker. Because Maryland public assistance checks are written on Signet Bank, which is a local bank and a member of the Clearinghouse, other members can deliver the checks directly to Signet. (All five banks in our sample are members of the Baltimore-Washington Clearinghouse, and hence clear their public assistance checks through it.) Non-member banks can route their local checks through a correspondent bank that is a member. Banks using the Clearinghouse keep a record of the number of checks and their values on a receipt form. Signet

Bank then credits the accounts of the various member banks and debits the State's account for the value of the checks.

Some banks that are not members of the local clearinghouse send public assistance checks to FRB of Richmond for clearing. At FRB, deposits of paper checks are received daily. The checks are blocked (i.e., sorted by bank and location), MICR-encoded, and prepared for processing. Credits and debits into accounts of local banks are made by FRB and the bank accounts are reconciled. Finally, the public assistance checks are dispatched to Signet Bank.

It should be noted that the processing of public cash assistance checks at the local clearinghouse and at FRB is no different from the processing of other checks received by these entities. Public assistance checks are not separately tracked at either of these clearinghouses.

The Costs of Redemption of Public Cash Assistance Benefits

We have estimated the cost of processing checks from the data gathered in the pre-implementation interviews. Some banks in our sample reported results of internal studies that estimated the cost of processing checks based on their cost accounting systems. Banks B, C, D and E provided us with direct estimates of their collections center costs. We estimated the branch costs of these banks based on data on labor costs, equipment costs, materials costs and fringe benefits collected from the interviews. These costs were combined with the direct estimates of collections center costs to obtain the total cost (branch plus collections center) to local banks of processing public assistance checks. Bank A did not provide us any direct estimates of check processing costs because it considers such information as strictly proprietary. Bank A, however, did confirm that our estimate of its costs—based on data on labor costs, equipment costs, materials costs, fringe benefits and indirect rate—was consistent with the bank's own estimate.

We first estimated the cost per check, since the cost and process information reported by the banks was in terms of number of checks. The cost per check is then converted into a cost per $1,000 of cash assistance benefits redeemed. Our estimate of check processing costs of the banks in the sample ranged between $0.35 and $0.44 per check.

Since the processing of public assistance checks is almost identical to the processing of other checks, it is also relevant to look at estimates of check handling costs developed by the Federal Reserve Board. A recent study by the Federal Reserve Board estimated that the cost

to commercial banks of cashing checks is, on average, $0.36 to $0.40 per check, and the cost of processing deposits is $0.40 to $0.44 per check.[32] Therefore, our estimates are in line with the findings of this Federal Reserve Board study.

The banks in the sample were not able to estimate the volume of public assistance checks they process. In the absence of information on relative shares, we computed a simple average of check processing costs to local banks in our sample. This yielded an average cost of processing cash assistance checks of $0.41 per check.

Based on program data,[33] we estimate that the average value of a public assistance check is $234.20. This implies that the cost to financial institutions in Maryland of processing checks equal to $1,000 of cash assistance benefits, at the rate of $0.41 per check (excluding float costs), is $1.75.

According to data from the cost accounting systems at the local banks that were interviewed, the cost of clearing checks at the local clearinghouse is $0.007 per check. We understand that most public assistance checks clear through the local clearinghouse. As we do not know the proportion of checks that clear through FRB (though we know that it is a small proportion), we have used $0.007 per check as the clearinghouse costs. Our estimate of clearinghouse costs of processing cash assistance benefits is $0.03 per $1,000 of benefits.

The cost of processing checks at FRB, based on internal estimates of FRB of Richmond, is $0.0145 per check. Our assumption that all checks are cleared at the local clearinghouse therefore slightly underestimates the true cost of processing cash assistance benefits. Even if we arbitrarily assume that 15 percent of public assistance checks clear through FRB, however, the clearinghouse cost of processing cash assistance benefits worth $1,000 increases by less than 1 cent. Hence, our estimate is not a serious underestimate of the true cost of clearing public assistance checks.

Local banks incur float costs in participating in the redemption of cash assistance benefits. As funds are immediately made available to recipients and banks receive funds from the clearinghouse mechanism only after two days, on average, local banks bear the float costs

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32. *Functional Cost Analysis Study*, Federal Reserve Board, Washington, D.C., 1991.

33. Data were collected on average monthly benefits and the average number of checks for AFDC, BCS, DALP, and NPACS.

resulting from the two-day lag. The float cost to local banks as a result of this two-day lag is estimated at $0.19 per $1,000 of cash assistance benefits redeemed.[34] Based on data from the pre-implementation recipient survey, however, only 51 percent of assistance checks and support payments are actually deposited or cashed at banks. The rest are cashed at other locations (e.g., at food stores or check-cashing stores). When these other entities deposit the checks in their bank accounts, the banks are not required to make funds immediately available. Thus, these other entities absorb the two-day float rather than the banks. Float costs to financial institutions, therefore, equal 49 percent of the $0.19 per $1,000 estimate, or $0.10 per $1,000 of benefits redeemed.

Exhibit 6.13 summarizes these costs to financial institutions. Including float costs, the cost to financial institutions of redeeming public cash assistance benefits in Maryland is $1.88 per $1,000 of benefits, or $687,000 annually given average monthly assistance and support payments of $30.5 million. The entire financial institution cost of redeeming cash assistance benefits is incurred by local banks since the local clearinghouse is operated by these banks. For the small proportion of checks that clear through FRB, since local banks pay FRB a fee for clearing checks, the net cost to FRB of clearing public assistance checks is zero.

EXHIBIT 6.13

COSTS TO FINANCIAL INSTITUTIONS OF REDEEMING CASH ASSISTANCE BENEFITS
(per $1,000 of benefits)

System	Local Bank Costs	Clearinghouse Costs	Float Costs	Total Financial Institution Costs
Paper-based System	$1.75	$0.03	$0.10	$1.88

6.5 EBT REDEMPTION OF CASH BENEFITS

Maryland's EBT system permits AFDC, BCS, DALP and NPACS clients to access their benefits in three ways: at POS terminals deployed in food and non-food stores; at ATMs that are part of the MOST network; and through direct deposit of benefits to the clients' own bank

34. The rate of interest used to determine float costs is 3.5 percent per annum.

accounts. In August 1993, over 73 percent of cash benefits in the EBT system was withdrawn at ATMs. Twenty-five percent of benefits was accessed at POS terminals. Only 2 percent of the issued benefits was deposited directly into clients' bank accounts.

This section describes the POS and ATM cash settlement processes and estimates financial institutions' costs under each process. It also estimates financial institutions' costs related to direct deposit. An overall cost per $1,000 of cash benefits redeemed or direct deposited is then estimated using the relative shares of benefits accessed with each option. EBT-related costs for cash benefit redemption are then compared to those costs experienced by financial institutions under the paper-based system.

Overview of the EBT POS Cash Settlement Process

During the three-month period of June through August 1993, $22,686,456 in POS cash assistance was redeemed through the EBT system. As shown in Exhibit 6.14, the settlement process for these POS cash benefits under EBT is very similar to that for POS food stamp benefits. At certified retailers, Independence card-holders initiate transactions for cash, goods or services through the retailer's POS terminal device. All transactions are logged by Deluxe, which at the end of the business day sends an ACH transmission settling all retailer accounts to Norwest Bank of Minneapolis. After performing some reviews and sorting, Norwest sends the ACH file along to FRB of Minneapolis in time for the overnight cut-off.

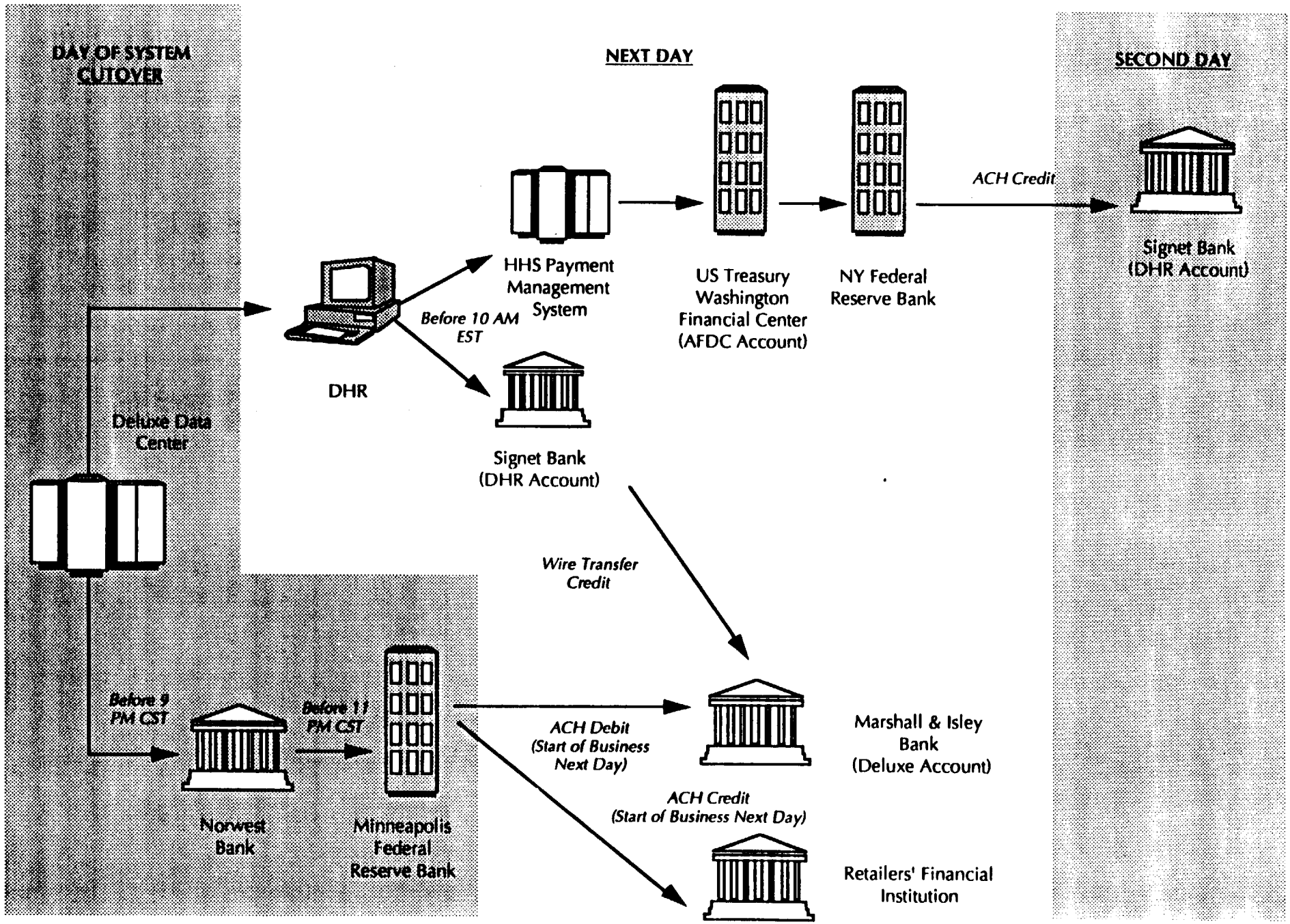
That night, FRB regroups all the ACH transmissions that it has received, organized according to destination bank. At the start of the next business day, the banks where the participating retailers have accounts receive a transmission, routed through FRB of Richmond, containing the net credit for each retailer's account. The individual financial institutions apply these ACH deposits to the retailers' accounts as part of their normal overnight posting procedures.

The same day that it sends ACH transmissions to the retailers' banks, FRB of Minneapolis transmits a debit to M&I of Minneapolis for the amount of ACH retailer deposits. M&I, which serves as the clearing bank for POS cash redemption in the Maryland EBT system, then debits the Deluxe Settlement Account by the ACH amount received from FRB.

The principal way in which the POS cash benefit settlement process differs from the

Exhibit 6.14

POS - Cash Settlement



Account at M&I is replenished. To replenish the Settlement Account for POS cash benefits, the State of Maryland initiates a wire transfer of funds from its bank (Signet Bank) to M&I based on a clearing report (the daily Clearing Statement) received from Deluxe on the net amount credited to retailers. When M&I receives this wire transfer, it credits the Deluxe Settlement Account. This wire transfer is normally received by M&I on the same day as the debit from FRB, and the credit is for ***both the federal and state portions*** of the POS cash benefits redeemed.

To receive reimbursement for the federal portion of the POS cash benefits disbursed (i.e., for AFDC benefits), the State of Maryland initiates a draw request against the State's Letter of Credit through the DHHS PMS. DHHS verifies the availability of funds and authorizes the U.S. Treasury's Washington Financial Center (WFC) to disburse funds. WFC in turn authorizes FRB of New York to accomplish the fund transfer ***through an overnight ACH credit*** to the DHR account at Signet Bank.

Estimated Costs of POS Cash Benefit Redemption

Because the Maryland EBT processor does not distinguish between ACH items for POS food stamp transactions and POS cash benefit transactions, for our analysis of the costs to financial institutions of redeeming $1,000 worth of POS cash benefits we use the same estimates that were derived for EBT food stamp benefit redemption. These estimates are summarized in Exhibit 6.15.

EXHIBIT 6.15

ESTIMATE OF COST TO FINANCIAL INSTITUTIONS OF POS CASH BENEFIT REDEMPTION
(per $1,000 in benefits)

	Local Banks	Originating and Settlement Banks	Federal Reserve Bank	Total
Total costs	$0.164	$0.071	$0.076	$0.311
Total reimbursements	$0.406	$0.117	$0.076	$0.599
Net cost	-$0.242	-$0.046	$0.000	-$0.288

Table of Contents

Overview of the ATM Cash Settlement Process

Under the Maryland EBT system, the State employs bank ATM networks to dispense cash to clients eligible for a variety of federally- and state-funded public assistance and child-support programs. The State makes use of the MOST network of ATM devices, and Maryland's benefit transfer system must follow the network's normal procedures for moving money among network members. The EBT processor, Deluxe, is treated as a card issuer within the MOST network. An account has been established for Deluxe on behalf of the State at Crestar Bank, which serves as the clearing bank for the MOST network.

Exhibit 6.16 provides an overview of the ATM settlement process. The program client uses the Independence card at a MOST network ATM to initiate a cash transaction. The transaction information is electronically routed to Deluxe through the MOST system. The EBT processor verifies the client's PIN and account balance. If the PIN is correct and there is a sufficient account balance, Deluxe reduces the client's EBT account by the requested amount and returns an authorization message through the MOST network. The client receives the cash from the ATM device, and Deluxe maintains a log of the transaction.

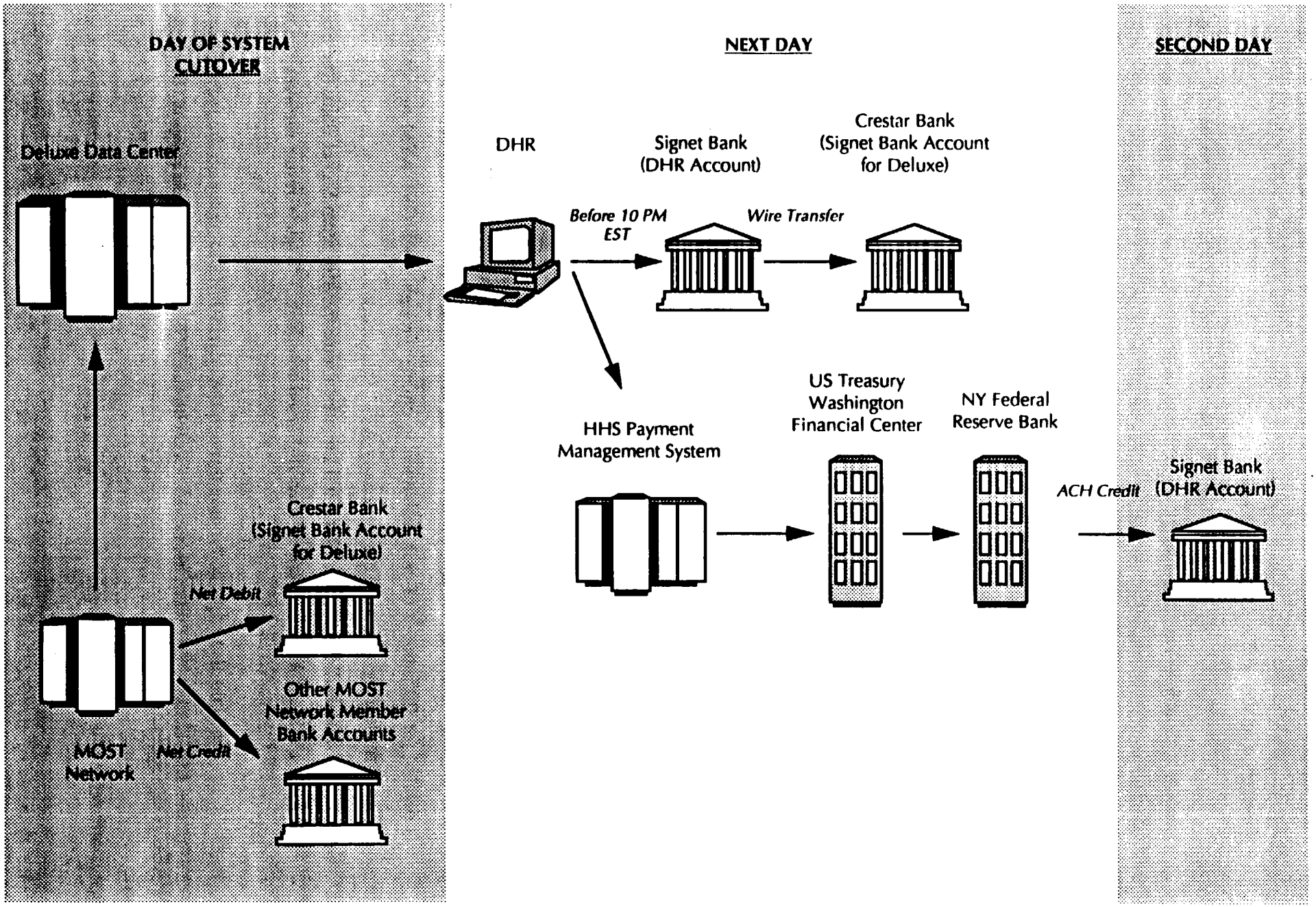
At the end of each business day (4 p.m. Eastern Standard Time), the various MOST transactions are settled through Crestar Bank. A net credit or debit amount is calculated for each member of the MOST network (resulting in a zero net balance for the network), and each member is sent a report describing their net settlement. Crestar then posts the accounts of the network members with the net settlement amount that was calculated for each institution; all network members maintain an account at Crestar and entries to accounts are made to move the funds among members. As part of this process, the Deluxe ATM settlement account at Crestar is debited for the amount of cash disbursed to clients through the MOST ATM devices.

A clearing report on the total daily ATM transactions and settlement is sent by Deluxe to DHR. Based on this report, Maryland initiates a wire transfer from Signet Bank (the State's bank) to Crestar for the amount of cash disbursed to clients. When Crestar receives the wire transfer, it credits the Deluxe settlement account for the corresponding amount.

The State also requests funding through the DHHS PMS to replenish the federal portion of the AFDC funds that were disbursed. As with the POS cash settlement process, the State of Maryland receives this funds transfer in the form of an ACH credit processed through the WFC and FRB of New York.

Exhibit 6.16

ATM - Cash Settlement



The Costs of EBT-Related ATM Cash Settlement

Potential sources of costs for local banks in settlement of EBT-related ATM activity include:

- Capital costs for installing equipment and upgrading facilities;
- Operating costs for maintaining and servicing ATM devices;
- Float costs; and
- Resolution of error costs.

Each of these cost elements is discussed below.

The most obvious impact of EBT on ATM operations would be expected in the area of volume of activity. Four of the five local financial institutions in the study reported experiencing a discernible increase in ATM transaction volume since the introduction of EBT for cash assistance, with only Bank C reporting no appreciable increase. Bank D reported a overall boost in monthly transactions of 1 to 2 percent. Bank A reported an increase of 10 percent. Bank B and Bank E each reported increases on the magnitude of 20 to 25 percent. All the banks, however, indicated that their ATM tracking records did not distinguish between EBT and other ATM transactions, and therefore it is not possible to attribute a precise amount of this volume increase to EBT implementation. Nonetheless, many bank personnel ventured opinions that between 75 and 90 percent of the recent increase in transactions was probably a result of EBT.

The variation in ATM volume increases was also seen among the individual bank branches, with a few branches reporting no apparent change, others reporting increases ranging from approximately 20 to 45 percent, and one bank reporting that a single branch experienced a 200 percent increase in volume since implementation of EBT.

However, only one of the banks in our sample installed an additional ATM machine since implementation of EBT. Branch B1 of Bank B experienced a 43.9 percent increase in ATM foreign transaction volume from May 1992 to May 1993, an increase that the branch manager feels is "all due to EBT." Bank B had an extra ATM available, which it was able to install at Branch B1 at a cost of $12,000.[35] Other than at this one branch, no bank in our

35. Bank B indicated that this price was much lower than the normal cost for installation of an ATM, because of the availability of the extra machine. Bank B estimated that the typical cost for ATM installation, including purchase of the machine and construction of the kiosk, was on the order of $40,000 - $50,000.

sample added ATM equipment in response to EBT implementation, even in those instances where the increase in volume would normally have warranted the addition of an ATM machine (previously, banks had indicated that an increase of 9,000-12,000 or more transactions a month is needed to make an ATM machine self-supporting).[36] .This situation appears to stem from the tight fiscal environment in which many Maryland banks find themselves due to losses suffered as a result of the recent decline in real estate values. Although some banks are considering adding new ATMs in the future, in no case was it evident that such planned actions are being contemplated as a direct response to EBT.

Marginal capital cost for the banks in our sample could be derived by spreading the amortized costs of Branch B1's additional ATM over the five banks. However, for our analysis the relevant measure is not marginal capital cost but instead ***average capital cost***, since EBT activity is using up significant capacity at many ATMs regardless of whether the banks have yet chosen to add more machines at those sites. To calculate average capital cost, we assume a basic cost per ATM device of $30,000.[37] If the average volume of activity per ATM is 7,000 transactions per month, amortizing the $30,000 expense of the machine over 36 months at 6 percent interest results in an average capital expense of $0.130 per transaction. From June through August 1993, the mean volume of EBT-related activity was 351,286 transactions per month, for an average of $22,032,837 in cash benefits accessed by recipients through ATMs on a monthly basis.[38] This results in EBT ATM withdrawals averaging $62.72 per transaction, and therefore an average capital cost of approximately $2.07 per $1,000 of benefits redeemed.

In terms of ongoing costs of operation of the ATMs, the banks in the sample were asked whether they were required to service their machines more frequently as a result of ATM volume increases. Across the four banks that experienced volume increases at least partially attributed to EBT, all initially found it necessary to restock ATMs with cash more frequently, or at least to reload the machines earlier in the week, particularly during the first week of the

36. See John Kirlin and Emily Corneliussen, *Examining Recipients' Access to Cash Benefits in a Proposed EBT System*, Abt Associates Inc., Cambridge, MA, May 4, 1993.

37. The balance of the $40,000-$50,000 installation expense is assumed to be associated with kiosk construction, which is not necessary for subsequent ATMs added to the sites.

38. These estimates are based on data provided by Deluxe and DHR.

month. The banks noted that this added activity did not noticeably increase their operating costs. The ATM servicing function is only a very small part of the branch staff's responsibilities, so that the marginal increase in time spent servicing the machines—which was largely limited to one week a month—was not seen as resulting in more costs for branch operations. In addition, the banks reported that the after-hours crews that restock machines generally are paid by the number of ATMs that they service, not by how often they go to a location.

Perhaps more important, the need to service the ATMs more frequently has been significantly mitigated by the branches loading the machines with more money. Standard ATM machines normally were loaded with two cassettes holding up to $40,000 each. However, these ATMs can accommodate an additional two cassettes. As the branches have become more familiar with the new monthly cash profiles for the ATMs, they have adjusted the amounts of cash with which the machines are restocked, especially during the first week of the month. Banks A, B, and E all indicated that the branches with heavy EBT activity are now loading more money in their ATMs. Some branches, such as Branches B1 and B2, have increased the amount of money loaded into their locations' ATMs by as much as $100,000 per restocking. Since the funds in the ATMs are counted against the bank's reserve requirements (and any funds withdrawn by recipients are reimbursed through the daily Crestar settlement), there is no float attributed to this function for the local financial institutions. In fact, rather than resisting the stocking of additional funds in the ATMs, one branch manager indicated that her bank stressed the maintenance of adequate funds at all times in the ATMs as an important customer service issue.

If the Independence card-holder using an ATM terminal disputes the balances shown for his or her benefit authorization, resolution of the matter is handled by Deluxe (and, in some instances, DHR), not the ATM-owning bank. The bank staff would only be involved if a client claimed that the amount disbursed by the ATM was different from that shown on the withdrawal slip provided by the ATM. None of the interviewed branch staff recalled any such claims by Independence card users (but they indicated that such problems would be relatively easy to resolve by comparing the actual cash balances in the ATM machine with the end-of-day printout from the machine).

The impact of each of the expense elements discussed above is summarized in Exhibit 6.17, presented in terms of cost per $1,000 of cash benefits accessed. Based on respondents' views, zero costs have been assigned to operating costs, float costs, and accounting error costs.

Utilization of bank-owned ATMs by Independence card-holders to access benefits is not only a source of expenses for branches; it is also a source of revenue for the financial institutions. The Independence card user is viewed by the MOST system and ATM-owning bank as a customer of another financial institution using the bank's ATM to access their account at the other institution. Therefore, EBT-related inquiries and withdrawals are logged by the MOST system as "foreign transactions." Under the MOST system, the ATM-owning institution is paid a fee for each foreign transaction that it "acquires." This fee varies by the nature of the transaction, with lower fees for inquiries (on average, approximately $0.25 per transaction), and higher fees for withdrawals (on average, approximately $0.40 per transaction). The cost of these MOST fees is paid by Deluxe, the EBT system processor. For the period of June through August 1993, Deluxe was billed $452,117 in interchange fees for 1,053,859 transactions, or an average fee of $0.429 per transaction. Of this, $0.14 per transaction goes to Internet, the operator of the MOST system, with the remaining $0.289 per transaction going to the ATM-owning bank. As shown in Exhibit 6.17, this means an average revenue for an ATM-owning institution of approximately $4.61 per $1,000 of benefits accessed. This results in net revenue to local ATM-owning financial institutions for EBT-related ATM cash settlement of $2.54 per $1,000 of cash benefits accessed by clients.

The other costs of EBT-related ATM activity are the expenses incurred by Crestar Bank in its daily settlements among MOST members, and in its receipt of wire transfers and adjustments to the Deluxe ATM settlement account. According to Crestar Bank representatives, the bank does not compile data on the expenses for this function, and charges no fee. Because these functions are very similar to the combined roles of FRB and M&I in ACH settlement, however, we use the per-item expenses calculated for FRB and M&I to develop an estimate for Crestar. Crestar also requires MOST members to maintain minimum balances in their accounts at the bank, and we assume that the revenues that Crestar realizes from these balances at least equals its costs associated with ATM settlement.

Exhibit 6.18 combines the costs and revenues of the local banks, and our estimates for Crestar Bank in its role as ATM settlement bank, to determine the net costs of EBT-related

Table of Contents

EXHIBIT 6.17

LOCAL BANKS' EBT-RELATED ATM CASH SETTLEMENT COSTS AND REIMBURSEMENT
(per $1,000 of benefits)

	Amount
Cost Element	
Capital costs	$2.072
Operating costs	$0.000
Float costs	$0.000
Accounting error costs	$0.000
Total cost	$2.072
Reimbursement	
ATM foreign transaction fees received	$4.607
Total reimbursement	$4.607
Net Cost to Local Banks	-$2.535

EXHIBIT 6.18

NET COSTS TO FINANCIAL INSTITUTIONS FOR EBT-RELATED ATM CASH SETTLEMENT
(per $1,000 of benefits)

	Local Banks	Crestar Bank	Total
Total costs	$2.072	$0.460	$2.532
Total revenues	$4.607	$0.460	$5.067
Net costs	-$2.535	$0.000	-$2.535

ATM cash settlement. Total costs are estimated to average approximately $2.53 per $1,000 in benefits, and total revenues to average $5.07 per $1,000. Because Crestar's revenues are assumed to cancel out its expenses, the net cost to financial institutions for ATM settlement is the same as for the local banks, that is, net revenues of $2.54 per $1,000 worth of benefits redeemed.

The Costs of Direct Deposit

For those clients with bank accounts who select direct deposit, Deluxe creates an ACH notice of funds to be direct deposited. The ACH then sends the credit item to the client's financial institution.

As noted in Section 6.3, the Richmond FRB charges receiving banks $0.015 per item for receiving interregional ACH transmissions. This translates into an average fee of $0.064 per $1,000 of benefits deposited, given an average deposit of $234.20. The receiving banks incur an additional operating cost of $0.045, on average, for receipt and posting of the ACH item. This leads to additional costs of $0.192 per $1,000 of benefits deposited.

Banks incur no float costs associated with direct deposit, and they report insignificant accounting error costs.[39] Thus, total costs equal $0.256 per $1,000 of benefits deposited.

The banks in our sample charge customers an average of $0.148 for each ACH item posted to their accounts. Total revenues per $1,000 of benefits deposited therefore equal $0.632. As shown in Exhibit 6.19, local banks' net revenues are therefore $0.376 per $1,000 of benefits deposited.

For interregional ACH transfers, FRB charges $0.015 per item, which equals $0.064 per $1,000 of benefits direct deposited. FRB's net expense is zero due to its cost-based pricing policy.

Comparison of Costs of Cash Assistance Redemption under Coupon System and EBT System

Exhibit 6.20 compares the costs experienced by financial institutions for cash assistance redemption under the check-based system and the EBT system. Because clients can access their cash benefits by three methods (through either POS transactions, ATM withdrawals, or direct deposit), the EBT figures represent a weighted average of each method's costs and revenues, based on the dollar volume accessed through each method.

As can be seen from Exhibit 6.20, the EBT system leads to a small increase in total costs for cash assistance redemption ($0.06 for every $1,000 in benefits redeemed). However,

39. While the Maryland system has experienced some problems with direct deposit (usually because the client's reported bank account number is incorrect), these unsuccessful ACH transfers are rejected and returned to Deluxe for resolution. Thus, the banks' costs to handle these problems are very small.

EXHIBIT 6.19

LOCAL BANKS' DIRECT DEPOSIT COSTS AND REIMBURSEMENT
(per $1,000 of benefits)

	Amount
Cost Element	
Capital costs	$0.000
Operating costs	
FRB ACH fee	$0.064
Other operating costs	$0.192
Float costs	$0.000
Accounting error costs	$0.000
Total cost	$0.256
Reimbursement	
Deposit charge to customers	$0.632
Total reimbursement	$0.632
Net Cost to Local Banks	-$0.376

EXHIBIT 6.20

COMPARISON OF COSTS TO FINANCIAL INSTITUTIONS FOR CASH ASSISTANCE REDEMPTION UNDER CHECK-BASED SYSTEM AND EBT SYSTEM
(per $1,000 of benefits)

	Check-Based System	EBT System	Difference
Total costs	$1.88	$1.94	$0.06
Total revenues	N/A	$3.87	$3.87
Net costs	$1.88	-$1.93	-$3.81

because of the revenues realized by the financial institutions under the EBT system, the net savings after reimbursement are $3.81 per $1,000 of benefits redeemed. With monthly cash

program redemptions of $30.5 million in the Maryland EBT system, these savings yield net annual revenues to Maryland banks of about $1.4 million.

Local Financial Institutions' Views on the Impact of EBT on Check-Cashing and ATM Operations

One major area of EBT impact identified by local financial institutions was in the volume of their check-cashing workload. Prior to EBT implementation, at the first of the month many bank branches would have long lines of recipients who wished to cash their assistance checks. As noted earlier in this chapter, most banks allow even non-accountholders to cash public assistance checks at their branches. Although the pre-EBT check-cashing volume varied considerably among the branches in our study, some locations typically would have as many as 300 people on the first day of the month cashing assistance checks. Some branches employed an extra part-time teller to deal with this volume during the first week of the month, and set up a special line for check-cashing. Other branches tried to handle the increased volume with their normal staff complement, which would often result in long waits and some resentment being expressed by both the bank's regular customers and the public assistance recipients waiting in line.

All of the branches that reported heavy pre-EBT check-cashing volume indicated that the implementation of EBT has had a significant impact on reducing the non-accountholder lobby traffic at the beginning of the month; those branches that were able to provide an estimate for the size of the decrease in check-cashing volume indicated reductions ranging from 50 to 99 percent. The banks indicated that this has resulted in a real improvement in the waiting time for customers in the beginning of the month. Bank staff also speculated that the decrease in check-cashing volume has resulted in savings due both to reduced teller workload and the fact that ATMs are seen as less likely to make mistakes in disbursing funds than tellers.

On the other hand, many branches reported a corresponding increase in the lines of people waiting to use the ATMs at the beginning of the month. All of the banks in our study except Bank C reported noticing longer lines at ATMs, particularly at the beginning of the month.[40] For example, Branch B1 staff indicated that there will be as many as 30 people in

40. At some branches, the ATM machine is not visible from the bank lobby, so branch personnel sometimes only have a general sense of the pattern of ATM traffic over the course of the day.

line to use an ATM during the first three days of the month. The manager of Branch D1 reported that during the first few days of the month, when he arrives for work at 7:15 a.m., he will often discover as many as ten people lined up even though there is no access to the ATM until 9:00 a.m.

The impressions of bank branch staff are consistent with the findings from ATM observations performed for this study (see Appendix H). The sample of 20 ATMs revealed that both the average wait time and the average transaction time are significantly higher in the peak period at the beginning of the month than during the third week of the month, suggesting that the influx of EBT customers had a real effect on the amount of time that customers had to wait to use an ATM.

In fact, the banks reported that the length of lines at the beginning of the month have generated complaints from their regular customers wishing to use the ATMs. Moreover, some of the banks commented that while the recipients who formerly cashed assistance checks were predominantly women (often accompanied by their children), increasingly the lines at the ATMs at the first of the month are dominated by men. These bank officials indicated that some bank customers are particularly intimidated by the groups of males waiting to access the ATM machines.

Another complaint that bank branch staff commonly expressed was related to the training on the use of the Independence card when EBT was first implemented. Branch staff felt that a lot of the recipients had not been adequately trained on how to use an ATM, and therefore had quite a few problems with the Independence cards, including making repeated small transactions that held up ATM lines or errors that caused their cards to be captured. Many branch staff felt inadequately briefed and unprepared for initial EBT implementation, and when cardholders came into the branch lobby to complain or ask for help, the branch staff did not know to whom the recipients should be referred. Currently, however, the branch staff generally appear to feel that most of these initial training and referral problems have been resolved, and report that Independence cardholders rarely approach them for help or with complaints anymore.

In fact, both the branch staff and the main office bank staff overseeing ATM operations uniformly expressed an overall positive assessment of the EBT system. The branches particularly appreciate the reductions in lobby traffic and teller workload, while the main office staff emphasized the revenues from the ATM foreign transactions.

6.6 Overall Cost Impacts of EBT

Sections 6.3 and 6.5, respectively, have provided estimates of the impacts of the Maryland EBT system on financial institutions' net costs to process food stamps and cash program redemptions. This concluding section provides an overall estimate of the impacts of the EBT system on costs, revenues, and net costs.

Exhibit 6.21

SUMMARY OF EBT SYSTEM IMPACTS ON FINANCIAL INSTITUTIONS' COSTS
(per $1,000 of benefits)

	Food Stamp Program	Cash Programs	Total
Total Costs			
EBT	$0.31	$1.94	$1.16
Paper	$4.64	$1.88	$3.20
Difference	-$4.33	$0.06	-$2.04
Total Revenues			
EBT	$0.60	$3.87	$2.31
Paper	$0.86	$0.00	$0.42
Difference	-$0.26	$3.87	$1.89
Net Costs			
EBT	-$0.29	-$1.93	-$1.15
Paper	$3.78	$1.88	$2.79
Difference	-$4.07	-$3.81	-$3.93

As shown in Exhibit 6.21, financial institutions' costs to process $1,000 of food stamp benefits fall by $4.33 with the introduction of EBT. Revenues associated with this processing fall by $0.26 per $1,000 of benefits redeemed. The impact on net costs, therefore, is an EBT-related savings of $4.07 per $1,000 of benefits redeemed, or $1.4 million annually.

Financial institutions' costs to process cash program payments change very little under EBT, with an increase of only $0.06 per $1,000 of benefits processed. Financial institutions' revenues, however, increase from zero to $3.87 per $1,000 of benefits processed, leading to net

Table of Contents

revenues of $3.81 per $1,000 of benefits. This EBT impact realizes another $1.4 million in annual net revenues.

In August 1993, the EBT system processed $28.0 million in food stamp redemptions and $30.5 million in cash program redemptions (including direct deposit transfers of $539,000). Due to the similar magnitudes of these redemption levels, the EBT system's overall impacts on financial institutions, per $1,000 of total redemptions, are roughly equal to the simple average of the food stamp and cash program impacts. The system reduces bank costs by $2.04 per $1,000 of total benefits processed, and it increases revenues by $1.89 per $1,000 of total benefits processed. Overall, the $3.93 in net revenues per $1,000 of EBT benefits processed yields total new net revenues of $2.8 million per year.

APPENDIX A

NOTES ON DATA COLLECTION AND ANALYSIS FOR THE RECIPIENT IMPACT STUDY

This appendix provides additional detail on the procedures used in sampling, data collection, and analysis for the recipient impact study.

Data Collection Method

The pre-implementation survey was conducted between March and September 1992, while the post-implementation survey was conducted almost exactly one year later, between June and September 1993. We obtained 1,298 completed interviews in the pre-implementation survey and 1,338 in the post survey.

In both surveys we attempted to administer the survey by phone; where this could not be done, we conducted interviews in person.

Sampling

The pre-implementation sample was drawn from a February 1992 tape listing of recipients provided by the Maryland Department of Human Resources (DHR). Food stamp and public assistance recipients who had been receiving benefits for the previous two months were eligible for the survey. NPA Child Support (NPACS) participants who had received any child support checks since April 1991 (approximately 15 months before the survey) were eligible.

The sample universe represented all areas in Maryland except Cecil and Montgomery Counties, and the Park Circle district in Baltimore. These areas were excluded because they converted to EBT before the survey. We terminated interviewing in Prince Georges County early, because that county converted to EBT during the interview process.

A self-weighting, two-stage cluster sampling strategy was used. The sampling unit was zip code clusters. Clusters were stratified by urban/rural location and food stamp issuance system, for a total of six strata (ATP issuance urban, ATP issuance rural, mail issuance urban, mail issuance rural, OTC urban, and OTC rural). To construct the clusters, zip codes were classified as urban or rural based on U.S. Census data on urbanized areas. They were then

grouped into clusters, with all zip codes in a cluster having the same urban/rural designation and (county-based) issuance system.

In the first stage of sampling, 88 clusters were randomly drawn, with the probability of being drawn proportional to the number of recipients residing within the cluster. The second stage drew a random sample of approximately 23 recipients from each cluster chosen in the first stage.

An initial sample of 2,024 recipients was drawn. Problems locating recipients necessitated drawing supplemental samples from the same clusters (totaling 266 recipients) in June and July, 1992. The total sample frame was thus 2,290 recipients. From these, 1,298 interviews were completed for a response rate of 68.2 percent (388 recipients were ineligible, and 604 interviews could not be completed).

For the post-implementation survey, we drew our sample from the same clusters we had used in the pre-implementation survey (this ensured that some important factors, such as average travel times and distances, would be roughly constant across the two samples). Additionally, we selected recipients from the three areas not sampled in the pre-implementation survey, according to the same two-stage sampling strategy used previously.

As before, the sample was drawn from a listing of food stamp, public assistance, and NPACS participants provided to us by the Maryland DHR. An initial sample of 2,644 was drawn, from which we obtained 1,338 completed interviews.

The final status of interview attempts is shown in Exhibit A.1. All results have been weighted for nonresponse. Sample sizes, however, are presented in actual (unweighted) terms.

Exhibit A.2 presents demographic and economic characteristics by program.

Measuring Costs of Participation

A number of computational issues arise in computing and allocating participation costs programmatically. These are described below.

Computational Issues

Cost to Obtain Benefits. We amortized the costs of getting the EBT card initially and the cost of obtaining training over the average length of the program spell. For food stamp

EXHIBIT A.1

STATUS OF ATTEMPTED INTERVIEWS

	Pre-Implementation Survey		Post-Implementation Survey			
			Entire Sample		Areas Common to Both Surveys	
Status	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Completed						
By phone	593	31.2	788	35.2	672	35.0
In person	705	37.1	550	24.6	491	25.6
Total	1,298	68.2	1,338	59.7	1,163	60.5
Incomplete						
Breakoff	8	0.4	8	0.4	8	0.4
Refused	107	5.6	45	2.0	35	1.8
Partial complete	2	0.1	3	0.1	3	0.1
Language barrier	8	0.4	31	1.4	6	0.3
Could not locate	380	20.0	506	22.6	456	23.7
Located but no contact	99	5.2	309	13.8	251	13.1
Total	604	31.8	902	40.0	759	39.5
Total eligible for survey	1,902	100.0	2,240	100.0	1,922	100.0
Ineligible						
Deceased/ institutionalized	39		36		30	
No longer participates in program(s) (self-reported)	157		133		107	
No longer receives benefits (reported by State)	83		NA		NA	
Sample pulled from Prince Georges County	109		NA		NA	
Does not have/use Independence card two months	NA		39		35	
Moved out of state	0		14		12	
Total ineligible	388		222		184	
Unknown status	0		182		174	
Grand total	2,290		2,644		2,280	

EXHIBIT A.2

DEMOGRAPHIC AND ECONOMIC CHARACTERISTICS

	All Recipients		Food Stamp Recipients		Public Assistance Recipients		NPA Child Support Participants	
Percent	**Paper**	**EBT**	**Paper**	**EBT**	**Paper**	**EBT**	**Paper**	**EBT**
Household size								
1	26.2	27.5	29.9	29.5	14.6	10.4	0.7	3.2
2	22.6	21.6	22.6	22.0	25.2	26.0	26.1	27.5
3	22.6	25.3	22.1	24.5	26.8	31.8	27.0	40.2
4	15.7	15.1	14.8	15.2	17.7	17.8	20.0	13.5
5+	13.0	10.7	10.6	8.6	15.5	13.9	26.3	15.5
Employment status								
Employed full-time	12.0	8.2	4.6	4.8	3.8	5.1	79.6	44.8
Employed part-time	8.2	10.2	8.5	9.6	6.7	7.8	6.5	22.9
Not employed/retired	79.6	81.5	86.6	85.6	89.3	87.0	13.1	32.3
Unknown	0.2	0.2	0.3	0.2	0.1	0.2	0.9	0.0
Education								
Less than 9th grade	14.7	10.8	16.1	11.0	8.7	6.9	0.0	0.0
9th - 12th grade	71.8	75.4	73.0	76.3	81.0	81.1	61.7	62.4
More than 12th grade	13.3	13.0	10.6	11.9	10.0	11.1	38.3	37.6
Unknown	0.2	0.7	0.3	0.8	0.3	0.9	0.0	0.0

Table of Contents

EXHIBIT A.2 (CONTINUED)

DEMOGRAPHIC AND ECONOMIC CHARACTERISTICS

	All Recipients		Food Stamp Recipients		Public Assistance Recipients		NPA Child Support Participants	
Percent	Paper	EBT	Paper	EBT	Paper	EBT	Paper	EBT
Language								
English	98.8	98.4	98.9	98.3	98.8	98.7	98.9	100.0
Other	1.1	1.2	0.9	1.3	1.0	0.9	1.1	0.0
Unknown	0.1	0.4	0.1	0.4	0.1	0.4	0.0	0.0
Race								
White	31.3	30.4	32.0	31.0	27.2	25.5	22.0	26.4
Black	66.3	65.0	65.9	64.2	70.5	70.6	74.2	71.9
Hispanic	0.5	0.6	0.6	0.6	0.7	0.4	0.0	0.0

EXHIBIT A.2 (CONTINUED)

DEMOGRAPHIC AND ECONOMIC CHARACTERISTICS

	All Recipients		Food Stamp Recipients		Public Assistance Recipients		NPA Child Support Participants	
Percent	**Paper**	**EBT**	**Paper**	**EBT**	**Paper**	**EBT**	**Paper**	**EBT**
Age								
Less than 40	64.6	61.7	64.6	62.6	77.0	72.2	75.8	84.7
40 - 59	21.6	23.9	20.2	23.0	19.3	23.4	24.2	13.8
60 or more	12.6	13.1	14.2	13.6	2.5	2.9	0.0	0.0
Unknown	1.1	1.2	1.0	8.5	1.2	1.5	0.0	1.5
Sex								
Male	16.3	15.1	17.1	14.9	13.2	9.8	0.0	8.1
Female	83.7	84.8	82.9	85.1	86.8	90.1	100.0	91.9
Program Participation								
Receives PA and FS	54.0	52.5	62.7	58.1	89.1	88.9	NA	NA
Receives NPA Child Support and FS	0.5	1.9	0.6	2.1	NA	NA	7.0	37.3
Receives only one benefit (FS only/PA only/CS only)	46.0	45.7	36.5	39.8	10.9	11.1	93.0	62.7
Sample Size	1,298	1,163	1,110	1,055	776	682	114	54

Results weighted for nonresponse. Sample sizes are actual (non-weighted). EBT figures are for respondents living in areas also sampled in baseline survey (excludes Cecil and Montgomery counties and Park Circle). These are the respondents upon which the analysis is based.

NA = not applicable

FS = food stamps

PA = cash public assistance programs: Aid to Families with Dependent Children (AFDC), General Public Assistance (GPA)/Disability Loan Assistance Programn (DALP), Public Assistance for Adults (PAA), or Emergency Assistance (EA)

NPA = non-public assistance

Table of Contents

recipients this was a period of 22 months.[1] For public assistance recipients the period was 27.14 months, the average AFDC spell length. (Lacking spell-length data for other public assistance programs, we amortized over the AFDC spell length.)[2] For NPACS participants, the spell length was the number of months until the youngest child turns 18.

A number of recipients incurred zero costs to get the EBT card, either because they received it in the mail or obtained it at the training session. A few recipients incurred zero training costs because they obtained exemptions from training or had someone else attend in their place.

Some recipients incurred costs to get a replacement card. We computed a replacement cost for anyone who reported a lost, stolen, or damaged EBT card. As per the State's policy, no-one had to pay a replacement fee, but they did incur travel and waiting time costs to go pick up the card. To compute travel costs, we assumed that everyone went to the SSO to pick up the new card. This assumption is true everywhere but Baltimore City and Baltimore County (for which we lacked travel data for the pickup locations). Those who did not need a replacement card—the majority—were assigned a zero replacement cost.

Cost to Resolve Problems. This cost was computed as follows. Recipients were asked how many trips and calls they made in the previous two months and the reasons why (many recipients make a trip or phone call to deal with several accounts at once). The cost of ***all*** of a recipient's trips (calls) was assigned to a program based on the reason(s) for the most recent one.[3] This allocation method, while not necessarily accurate for any one individual, is designed to capture the distribution of costs in the aggregate.

Each most recent trip and phone call was classified as food stamp-related or cash-related, or both. Then, costs of food stamp trips (and calls) were allocated to the Food Stamp

1. This figure is based on national survey data from Nancy Burstein, *Dynamics of the Food Stamp Program as Reported in the Survey of Income and Program Participation*, Abt Associates Inc., Cambridge, MA, June 1992.

2. The mean AFDC spell (27.14 months) is a Maryland statewide average, as reported in internal DHR correspondence.

3. No data were available regarding reasons for all previous calls and trips; even if available, these would have been vulnerable to recall error.

Program; costs of cash-program trips (and calls), to the cash program; the costs of trips/calls made for both reasons were split evenly between the respective programs.

Where the reasons given were not program-specific (for example, the response was vague, or the reason was unrelated to either the Food Stamp Program or public assistance programs, or it referred to a program in which the recipient did not participate), costs were allocated according to the recipient's program participation.

Value of Lost Benefits. Since we only considered losses that were not replaced, we excluded ***delays*** in receiving benefits, since by definition delayed benefits are eventually received.[4]

Another issue is how to treat benefit losses due to crime. We include cases of stolen coupons or checks, but make no attempt to measure losses ***after*** benefits were redeemed. Accordingly, we exclude post-withdrawal losses of cash benefits (e.g., muggings), but we include the few cases where recipients were forced to make a cash withdrawal with the card. Similarly, we include cases of unauthorized card use, e.g., by a household member.[5]

Analytical Issues

The following analytic issues span all three components of participation costs.

Value of Time. How best to value recipients' time spent obtaining benefits and resolving problems? Clearly, a zero time cost fails to reflect the time burden that certain activities impose. One proxy is the recipient's actual wage rate, but many recipients are unemployed. We approximate a time cost by valuing time at the federal minimum wage of $4.25 per hour. This allows us to assign a positive value to time, and therefore to compare in dollar terms the time burden associated with different activities.

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4. This approach differs from previous analyses of the state-initiated demonstrations. There, the opportunity cost of losses which were ultimately replaced—e.g., delays—were included. These were computed as the opportunity cost of the benefit for the period of delay. The amount was minimal.

5. We asked recipients to consider such cases separately from those of actual card theft, on the premise that they may not consider unauthorized use by a household member or friend a "theft." No comparable distinction was made in the pre-implementation survey, however; recipients there were asked only if coupons or checks had been stolen.

Table of Contents

Joint Program and Personal Activities. Recipients sometimes perform several activities at the same time, raising the issue of how to allocate the costs of program-related and personal activities that are conducted together—for example, the cost of a trip to cash a check and run personal errands. Lacking information to permit a meaningful division of costs between such activities, we considered their entire cost to be ***program***-related. So, when an activity involved a program task, the entire cost was attributed to the program.

Joint Program-Related Activities. For recipients who belong to more than one program, a related issue is how to assign costs related to multiple programs. In the paper system, for example, a recipient may exchange an ATP and cash a public assistance check in the same trip. Since this was in fact quite rare, and since the cost components were reported twice (with regard to each activity), we computed a separate cost for each activity. For example, if a recipient exchanged an ATP and cashed a check in the same trip, two separate costs (the cost to exchange the ATP, and the cost to cash the check) were computed and assigned to the Food Stamp Program and cash program respectively. For these respondents, therefore, participation costs are somewhat overstated, but the amount is small when spread over the entire sample.

In the EBT system, shared program costs occurred more often. Where possible, we allocated costs program-specifically. For example, withdrawing cash is clearly a cash-program cost; similarly, since we knew whether theft or crediting errors occurred with respect to the food stamp or cash account, we assigned these costs accordingly.

The cost of activities that were not account-specific—for example, obtaining the card initially or reporting a forgotten PIN—was split evenly between the food stamp and cash programs.

Incompatible Program Participation. A number of respondents reported participating in incompatible cash assistance programs, such as AFDC and PAA. They were assigned to a program based on other information given in the survey, primarily source-of-income data. Any remaining inconsistent cases were resolved with assistance from the Maryland DHR.

Emergency Assistance (EA) can validly be obtained in conjunction with other cash programs. Where respondents reported participation in EA and some other cash program, we assigned the cost to the non-EA program. We did this because in the paper check system, most EA benefits were third-party checks which could not have been cashed and used by the

Table of Contents

respondent;[6] with regard to the EBT system, EA was not included in it at the time of our post-implementation survey.

Holders of Two EBT Cards. Some NPACS recipients received two EBT cards, one to access food stamp benefits and the for NPACS cash benefits. For them, the costs of getting the second card were assumed to be equal to the first.

Direct Deposit Recipients. Some cash recipients in the EBT system received benefits by direct deposit (a few NPACS respondents still received payments by check). However, when EBT was implemented, these recipients were issued EBT cards as a backup in case direct deposit failed. We included these respondents in computing costs of participation.

6. Typically, recipients pick up the check at the SSO and give it to the third party. Much less frequently, the check is made out to the recipient (for example, if it is the first, emergency installment of a cash grant allotment). Our cost, therefore, does not capture the cost of going to pick up the check, or cashing two-party checks, or delivering third-party checks.

APPENDIX B

STATEWIDE ESTIMATES OF PARTICIPATION COSTS AND SYSTEM PREFERENCES

Three areas were not surveyed in the pre-implementation survey because they had already converted to EBT: Cecil and Montgomery Counties, and the Park Circle district of Baltimore. These areas were excluded from all analyses presented in Chapter Two, in order that the pre/post analysis would cover the same geographic areas. In Exhibit B.1 we present statewide costs of participation in the EBT system, including the three areas omitted previously. Although these figures are not directly comparable to paper-system costs, they are a more comprehensive indicator of costs under EBT.

Recipients in the three areas not covered by the pre-implementation survey were sampled in the post-implementation survey with the same probability as recipients elsewhere in the state. The same two-stage, cluster sampling approach was used.

The addition of the three "new" areas does not change participation costs a great deal, since these areas represent a small portion of the entire state. Moreover, comparing costs in the new areas to those in the rest of the state, none of the cost differences is significant at the 5 percent level. The costs of resolving food stamp and public assistance problems, however, are significant at the 10 percent level. Food stamp problem-resolution costs in the new areas are half as large as in the rest of the state, while public assistance problem-resolution costs in the new areas are fourfold higher. In both cases, however, problem-resolution costs are the smallest component of the overall participation costs.

In the new areas, preferences for EBT are even stronger than in the rest of the state (see Exhibit B.2). This is true among all types of recipients, but because the new areas are a small share of the overall sample, they have a small effect on statewide preferences. The proportion of respondents across the state reporting they are satisfied with EBT (very or somewhat) is 95 percent for food stamp recipients and 98 percent for cash program cardholders. Statewide, 84 percent of former coupon users prefer the EBT card over coupons, and 92 percent of former check recipients prefer it over checks.

Table of Contents

EXHIBIT B.1

STATEWIDE COSTS OF PARTICIPATION IN EBT
(cost per case month)

	Entire State	New Areas	Rest of State	Difference
Food Stamp Program	$3.09	$2.61	$3.15	-$0.54
Cost to obtain benefits	0.79	0.72	0.80	-0.08
Cost to resolve problems	0.32	0.16	0.34	-0.18†
Cost of lost benefits	1.98	1.74	2.02	-0.28
Sample size	1,222	167	1,055	
Pubic Assistance	$6.65	$5.27	$6.81	-$1.54
Cost to obtain benefits	3.72	3.70	3.71	-0.01
Cost to resolve problems	0.23	0.79	0.17	0.62†
Cost of lost benefits	2.71	0.78	2.93	-2.15†
Sample size	769	87	682	
NPA Child Support	$8.60	$2.26	$8.97	-$6.71
Cost to obtain benefits	2.09	1.74	2.11	-0.37
Cost to resolve problems	1.94	0.52	2.02	-1.50
Cost of lost benefits	4.57	0.00	4.83	-4.83
Sample size	58	4	54	

Results weighted for nonresponse. Sample sizes are actual (unweighted). New areas are those not sampled in the pre-implementation survey (Cecil and Montgomery Counties and Park Circle District of Baltimore), and excluded in the pre/post analysis. Difference is new areas' costs minus rest-of-state costs.

** Statistically significant at the 1 percent level.
* Statistically significant at the 5 percent level.
† Statistically significant at the 10 percent level.

EXHIBIT B.2

STATEWIDE SYSTEM PREFERENCES

	Entire State	New Areas	Rest of State
Percent of former food stamp coupon users who prefer EBT over coupons	83.8	90.0	83.1
Percent of food stamp recipients who are satisfied/dissatisfied with the EBT card:			
Very satisfied	77.2	82.6	76.5
Somewhat satisfied	17.9	14.8	18.4
Somewhat dissatisfied	2.9	0.6	3.2
Very dissatisfied	1.3	1.4	1.3
Percent of former check recipients who prefer the EBT card over checks (public assistance and NPACS participants combined)	91.5	94.4	91.1
Percent of cash program participants who are satisfied/dissatisfied with the EBT card:			
Very satisfied	79.9	87.3	79.1
Somewhat satisfied	17.6	12.7	18.1
Somewhat dissatisfied	1.3	0.0	1.5
Very dissatisfied	1.0	0.0	1.2

Results weighted for nonresponse. New areas are those not sampled in the pre-implementation survey (upon which analyses in Chapter Two are based).

Source: Post-implementation recipient survey.

APPENDIX C

RECIPIENT ACTIONS AND PROBLEMS IN THE ISSUANCE PROCESS

Food stamp and cash benefit program recipients carry out certain activities to obtain and use their benefits, and encounter certain problems in doing so. These activities and problems underlie the estimates of recipient costs of participation that are presented in Chapter Two.

Chapter Two characterizes the processes in general terms, but omits much of the detail that can be seen when we consider each individual issuance system. This appendix presents some of the additional details.

Food Stamp Program

Coupon Issuance. Before EBT, the State of Maryland delivered food stamp benefits in three ways: mail delivery, ATP issuance, and OTC pickup at the SSO. With mail delivery, food stamp coupons were simply mailed to the recipient. In areas with ATP issuance, recipients received an authorization-to-participate (ATP) card in the mail, and then exchanged it for food stamp coupons at the SSO or an authorized agent. Finally, in some areas, recipients picked up coupons in person at the SSO.

Exhibit C.1 describes the food stamp issuance process for each of the three coupon issuance systems. Well over half of food stamp recipients (60.4 percent) in the pre-implementation sample received benefits via ATP; approximately one third (31.0 percent) by mail; and less than one tenth (5.9 percent) by OTC pickup at the SSO.[1]

Over three quarters of ATP recipients exchanged their ATPs at check cashing stores. Half of ATP recipients walked to the place where they exchanged the ATP; approximately one third drove (or were driven); and most of the rest traveled by bus. Traveling by bus takes the longest time, thereby incurring higher time costs.

1. Percents do not sum to 100 because 2.6 percent of food stamp respondents did not specify an issuance system. For these respondents, we applied the mean cost of obtaining food stamp coupons in order to be able to compute an overall cost of participation.

EXHIBIT C.1

HIGHLIGHTS OF THE PAPER FOOD STAMP ISSUANCE PROCESS

	Percent
ATP Issuance (n=654)	
Percent normally exchanging ATP at:	
Social Services Office	12.8
Check-cashing store	78.2
Pharmacy or other store	7.6
Other location	0.7
Percent normally traveling to exchange ATP by:	
Walking	50.4
Bus	18.3
Taxi	0.7
Driven by someone	21.0
Borrowed car	3.0
Own car	6.1
Other	0.5
Average one-way travel time (minutes):	17.1
Walking	14.6
Bus	29.2
Taxi	11.2
Driving	14.2
Average time to exchange ATP (minutes), excluding travel time	13.0
Child care paid per trip:	
Percent paying any	7.3
Average paid by those paying	$8.15
Mail Issuance (n=355)	
Percent who picked up coupons at post office in last two months	9.1
Average number of trips in last two months	1.6
Percent who picked up coupons at SSO in last two months	2.9
Average number of trips in last two months	1.3
Over-the-Counter Issuance (n=76)	
Percent normally traveling to Social Services Office by:	
Walking	11.5
Bus	9.0
Taxi	1.1
Driven by someone	37.7
Borrowed car	14.3
Own car	26.3
Other	0.0

Table of Contents

EXHIBIT C.1 (CONTINUED)

HIGHLIGHTS OF THE FOOD STAMP COUPON ISSUANCE PROCESS

	Percent
Average one-way travel time (minutes):	15.3
Walking	22.9
Bus	19.4
Taxi	5.0
Driving	13.4
Average time to pick up coupons, excluding travel time (minutes)	19.5
Child care paid per visit:	
Percent paying any	4.3
Average paid by those paying	$6.92

Results weighted for nonresponse. Sample sizes are actual (unweighted). SSO = Social Services Office.

Source: Pre-Implementation Recipient Survey

Exchanging the ATP took 13 minutes on average. Relatively few recipients paid for child care while they exchanged the ATP (probably because they took the children with them or relied on friends and family for free child care). Those who did pay for child care paid an average of $8.15 per trip.

Mail issuance typically requires the least effort by recipients. Exceptions to this are when coupons must be picked up at the post office (if the recipient maintains a post office box, for example) or SSO. Very few of our mail respondents, however, had to pick up their coupons at these locations.

OTC issuance requires a monthly trip to the SSO. Among recipients who receive benefits in this manner, most drove, with relatively few walking or taking the bus. Less than 5 percent paid for child care; those who did paid an average of $6.92 each time.

Problems Encountered with Food Stamp Coupons. Recipients may encounter problems of various sorts in obtaining and using their food stamp coupons. Problems reported by food stamp recipients in the pre-EBT survey are summarized in Exhibit C.2. Some of these problems were associated with obtaining coupons and therefore must be evaluated separately for each issuance system. Problems that occurred after the coupons are obtained are presumably not directly related to the issuance system, and are listed as the last group of entries in the table.

The most common issuance-related problem reported by ATP recipients was receiving ATPs late (reported by 15.4 of all ATP recipients), followed by coupons not being ready when the ATP is redeemed (9.4 percent). Additionally, 7.8 percent of ATP recipients reported receiving an ATP for the incorrect amount. Relatively few recipients reported problems with ATPs being lost, stolen, or damaged; having to pick up ATPs at the post office or SSO; or receiving too few food stamps.

The most common problem associated with mail receipt of food stamps, reported by 13.0 percent of mail recipients, was receiving food stamps late in the mail. The second most common problem was having to go to the post office or SSO to pick up the food stamps (11.9 percent). However, to the extent that some recipients do this by choice—for example, to avoid mail theft—they may not consider this a "problem." Among the eleven mail recipients who went to the SSO to pick up their coupons, two received too few food stamps and one said the food stamps were not ready for pickup on time. These account for weighted percentages of 20.8 and 10.1 percent, respectively. Very few mail recipients said waiting for mail delivery was a big

Table of Contents

EXHIBIT C.2

PROBLEMS WITH FOOD STAMP COUPONS

Problem	Percent
ATP Issuance (n=654)	
ATP had too few benefits	7.8
ATP lost or stolen	1.3
ATP damaged	0.5
ATP received late	15.4
Had to pick up ATP at post office or SSO[a]	4.7
Received too few coupons when exchanging ATP	2.1
Coupons not ready when exchanging ATP	9.4
Other ATP problem	0.5
Mail Issuance (n=355)	
Received too few coupons at SSO pickup[b]	20.8
Coupons arrived late in mail	13.0
Had to pick up coupons at post office or SSO[a]	11.9
Coupons not ready at SSO for pickup[b]	10.1
Received too few coupons in mail	6.4
Waiting for mail delivery is a "big" problem	1.2
Over the Counter Issuance (n=76)	
Coupons not ready at SSO for pickup	11.2
Received too few coupons at SSO pickup	14.9
All Food Stamp Recipients (n=1110)	
Coupons stolen	1.8
Coupons lost	1.4
Coupons damaged	0.4
Grocer overcharge	8.5
Other food stamp problems	1.5

Percents are weighted for nonresponse. Sample sizes are actual (unweighted).
SSO = Social Services Office.

[a] Pickup at post office or Social Services Office may be at recipients' choice.
[b] Percent is computed based on eleven mail-issuance recipients who picked up food stamps at SSO.

Source: Pre-Implementation Recipient Survey

problem. Similarly, few respondents reported problems with receiving too few food stamps in the mail.

Roughly equal proportions of OTC recipients reported issuance-related problems. They reported food stamps not being ready for pickup (11.2 percent) and receiving too few food stamps (14.9 percent).

Relatively few problems were reported once the food stamps were obtained. Very few respondents reported problems with food stamps being stolen, lost, or damaged. Over 8 percent of food stamp recipients, however, reported being overcharged by grocers. It is impossible to know whether such errors were food stamp related, or whether they occur more for food stamp recipients than for the general population.

EBT Issuance and Problems. Benefit issuance under EBT is comparatively straightforward. The amount of the food stamp allotment is credited electronically to the food stamp account on the assigned issuance day.[2] Recipients may verify that the credit has been made by running a balance-only transaction at a terminal, by calling the automated ARU, or by calling their caseworker. Recipients use their benefits to purchase food through electronic transactions initiated at the checkout counter.

The nature of the problems encountered changes substantially in the EBT system. Some of the problems that can occur in the paper system do not occur with EBT, such as difficulties exchanging ATPs or delays in picking up food stamp coupons. Conversely, EBT brings with it new potential problems such as system downtime and delays, and having charges debited to the wrong account.

Problems encountered within the previous two months are summarized separately in Exhibit C.3. We distinguish between problems with the card or the system generally, and those with the food stamp account specifically.

The most commonly reported problems were system downtime and delays, reported by 23.3 percent and 21.2 percent of food stamp respondents, respectively. Additionally, significant numbers of respondents noted having to change checkout lanes because the original lane was not

2. The issuance schedule changed in 1994 from a three-day staggered cycle to a five-day cycle.

Table of Contents

Table of Contents

EBT-equipped (13.3 percent) or being unable to find out the EBT balance (9.4 percent).[3] Problems with the food stamp account were less frequent. As in the paper system, overcharging by grocers was mentioned relatively frequently (by 5.8 percent of respondents).

Other problems are roughly analogous in the two systems, and it is informative to compare these. Fewer EBT respondents reported receiving benefits late. In the paper system, 15.4 percent of ATP recipients reported receiving ATPs late, and 13.0 percent of mail recipients reported receiving coupons late. In contrast, only 3.4 percent of food stamp recipients report benefits being credited late. The incidence of receiving the wrong amount also decreases slightly, more so for OTC and ATP recipients than for mail recipients. In the paper system, 14.9 percent reported receiving too few coupons at OTC pickup, 7.8 percent received ATPs for the incorrect amount, and 6.4 percent of mail recipients received too few coupons in the mail. In the EBT system, 6.2 percent of respondents reported accounts credited for the incorrect amount (5.1 percent reported credits that were too low; the rest received credits that were too high).

The incidence of grocer overcharges also declines: 8.5 percent reported them in the paper system, versus 5.8 percent with EBT.

Other types of problems, however, appear to increase with EBT. Relatively more respondents reported lost, stolen, or damaged EBT cards than reported the analogous problems with coupons. In particular, there appears to be a substantially higher incidence of lost EBT cards (7.3 percent of respondents) than lost coupons (1.4 percent).

Recipients were asked what they felt was the biggest problem with the way they get food stamp benefits. Among both coupon and EBT card-holders, three quarters of respondents claimed there was none (78.3 percent and 74.6 percent respectively). Among those who cited a "biggest" coupon-related problem, the most common was that of going to pick up the coupons. The most frequently mentioned "biggest" problems among food stamp card-holders were slow system operations (6.7 percent) and system malfunctions (5.4 percent).

3. It is unclear why so many recipients reported problems finding out their balance. Recipients can obtain their balance by calling a special automated number, by examining their last receipt, by asking the cashier to do a balance-only transaction at the terminal, or in some cases by using an ATM.

Cash Benefit Programs

Obtaining Benefits in the Paper Check System. In the paper check system, issuing cash benefits was straightforward. Each month checks were printed and mailed to the recipient, who then either deposited the check in a bank account or cashed it. There were virtually no costs associated with obtaining the check (unless the recipient had to pick it up in person), but there often were substantial costs to cash it, such as fees charged by check cashing stores. Maryland required that banks cash public assistance checks without a fee.

Most public assistance checks were issued once a month. AFDC recipients participating in the Child Support Enforcement Program could also receive a separate Bonus Child Support (BCS) check of up to $50 monthly. NPA Child Support (NPACS) participants received payments as per their court orders through the Child Support Enforcement Office in Baltimore.[4]

Exhibit C.4 presents the highlights of the cash issuance process for public assistance, BCS, and NPACS participants.[5] Virtually all public assistance recipients, and all NPACS recipients, normally received their checks in the mail. Very few recipients went to the post office or SSO to pick up their checks.

Relatively few public assistance participants (12.5 percent) had bank accounts. In contrast, three quarters of NPACS participants have bank accounts. Not surprisingly, then, over 90 percent of public assistance recipients cashed their checks, rather than deposit them in a bank.

Banks were the most popular location for both public assistance and NPACS participants to cash their checks (possibly because the State forbids bank fees for cashing such checks), used by between one third and one half of the recipients. Also frequently used were supermarkets, grocery stores, and check cashing stores.

4. BCS and NPACS are pass-through payments initiated with the non-custodial parent. Neither federal nor state funds are involved.

5. BCS is presented as a separate category because a separate check was issued. The distinction is not made in EBT system exhibits because BCS payments are simply credited to the cash EBT account. From the participant's perspective, they are indistinguishable from the AFDC payment.

Table of Contents

EXHIBIT C.4

HIGHLIGHTS OF THE PAPER CHECK ISSUANCE PROCESS

	Public Assistance (n=776)	Bonus Child Support (n=125)	NPA Child Support (n=94)
Percent usually receiving check in the mail	96.9	98.6[a]	100.0
Percent who picked up check at post office (last two months)	1.3	NA	0.0
Average number of trips for those who went	1.9	NA	0.0
Percent who picked up check at SSO (last two months)	3.0	1.4[a]	NA
Average number of trips for those who went	1.2	NA	NA
Percent who have bank account	12.5	18.1	75.5
Percent whose last check was:			
Cashed	93.1	93.0	65.8[b]
Deposited	6.8	7.0	34.2[b]
Of those who cashed last check, percent who did so at:			
Supermarket or grocery store	17.0	20.3	23.4
Other food store	3.2	10.3	2.4
Non-food store	10.3	13.3	7.9
Check-cashing store	23.3	17.2	23.3
Bank	40.9	35.0	36.6
Other	5.0	2.9	4.1
Of those who cashed their most recent check, percent who had to:			
Buy something	4.6	4.7	3.2
Pay a fee	47.8	51.6	40.8
Average percent fee	2.0%	1.9%	1.6%
Average flat fee	$3.49	$1.46	$1.02

EXHIBIT C.4 (CONTINUED)

HIGHLIGHTS OF THE PAPER CHECK ISSUANCE PROCESS

	Public Assistance	NPA Child Support
Percent normally traveling to cash/deposit check by:		
Walking	47.3	45.1
Bus	7.8	9.3
Taxi	1.9	0.0
Driven by someone	23.3	6.1
Borrowed car	4.5	1.1
Own car	13.2	36.7
Other	1.5	0.0
Average one-way travel time (minutes)	12.1	14.4
Walking	11.6	7.6
Bus	26.4	38.3
Taxi	9.0	NA
Driving	10.6	16.6
Average time to cash/deposit check (minutes)	10.6	7.5
Child care paid per trip:		
Percent paying any	5.9	11.1
Average paid by those paying	$9.13	$9.46
Percent who feel insecure with benefit check	13.6	NA
Percent who feel insecure with benefit check because:[c]		
Check can be stolen	81.5	NA
Check can be lost	33.2	NA
Large amount of cash	3.3	NA
Cash can be stolen	16.7	NA
Average number of days between receiving and cashing check	1.0	NA
Average number of days between cashing check and spending entire allotment	7.6	NA

Results weighted for nonresponse. Sample sizes are actual (unweighted). NA = not available (not asked).

[a] Refers to most recent check only.

[b] Asked only of respondents with bank accounts but, assuming all who do not have bank accounts cash the check, percent base reflects *all* NPACS participants.

[c] Percentage base is respondents who feel insecure with check. Multiple answers allowed.

Source: Pre-Implementation Recipient Survey

Overall, nearly half of public assistance recipients who cashed their last check paid a fee to do so. Somewhat fewer NPACS participants paid a fee.[6] Examining the incidence of check cashing fees by store types, 10 percent of recipients who cashed their check at banks said they paid a fee (surprising, since banks are not supposed to charge for this service), whereas approximately half paid a fee at supermarkets and grocery stores, and nearly all (95 percent) paid fees at check cashing stores.

The use of check cashing stores is likely due to their more convenient locations. It is possible that banks would be the preferred place to cash checks, but recipients may have to use supermarkets and check cashing stores when there are no bank branches in the neighborhood.

Average check cashing fees are between 1.6 and 2 percent when the fee is percentage based. The flat fees averaged $3.45 for public assistance recipients and $1.00 for NPACS participants—but these figures are difficult to interpret because some recipients may have reported the actual dollar amount of a percentage-based fee (so to the extent public assistance checks are larger than child support checks, the dollar amount would be larger).

Cash recipients were similar to food stamp recipients with regard to transportation and child care particulars. Approximately half walked to the place where they cashed their check, with most of the rest driving (or being driven). Cashing the check took an average of 10 minutes for public assistance recipients, and slightly less for NPACS participants. Relatively few respondents paid for child care during this errand.

Most public assistance recipients (86.4 percent) felt secure with checks. Among those who felt unsafe, the most common reasons were that the check can be lost or stolen. On average, one day passed between the time the check was received and cashed, and roughly one week later the entire allotment was spent.

Problems in the Paper Check System. Exhibit C.5 presents problems encountered with public assistance, BCS, and NPACS checks in the previous two months. In general, fewer problems were reported with checks than with food stamp coupons. Problems were categorized as those to do with obtaining the check (issuance problems) and those to do with cashing it. The

6. Since the rate of cashing versus depositing checks varies by program, it is useful to compare the incidence of check-cashing fees over *all* recipients (not just over those who cashed the check; this assumes those who deposit checks paid no fee). Then 44.4 percent of all PA recipients paid a fee, compared to 41.0 percent of BCS participants and only 25.4 percent of NPA child support participants.

EXHIBIT C.5

PROBLEMS WITH PAPER CHECKS

Problem	Percent		
	Public Assistance (n=776)	Bonus Child Support (n=125)	NPA Child Support (n=94)
Problems obtaining check			
Incorrect (too low) amount	3.4	NA	NA
Check lost or stolen	1.2	NA	3.8
Check damaged	0.0	NA	0.0
Check arrived late	9.5	NA	NA
Picked up check at post office	1.3	NA	0.0
Picked up check at SSO/CSOE	3.0	NA	0.0
Problems cashing check			
Did not have ID required	0.3	0.0	0.0
Store did not have enough money to cash check	0.4	0.0	0.0
Store refused to cash check	0.8	0.0	0.0
Store had limit on amount of check that could be cashed without a purchase	0.0	0.0	0.0
Other problems cashing checks	0.9	0.0	0.7
Other problems with checks generally	0.8	4.0	12.8

Results weighted for nonresponse. Sample sizes are actual (unweighted). NA = not available (not asked). SSO = Social Services Office. CSOE = Child Support Enforcement Office.

Source: Pre-Implementation Recipient Survey

latter problems typically originate with retailers or recipients themselves, and are largely beyond the control of the issuing agency. By far the most common problem in ***obtaining*** public assistance checks, cited by 9.5 percent of public assistance recipients, was delays in receipt. Very few other problems were mentioned.

NPACS participants were not asked about receiving checks late or in the wrong amount, since these problems may have stemmed from the absent parent rather than the issuance system. The only specific problem reported was having the check lost or stolen, but even this happened to very few people. AFDC recipients were not asked about problems obtaining BCS checks.

The incidence of problems ***cashing*** checks was virtually nil. However, the most salient fact with respect to cashing checks, though it is not classified as a problem here, is the

preponderance of check cashing fees. As discussed earlier, many recipients paid such fees, and they could be substantial. In the absence of other options, check cashing fees might well be considered a problem from the recipient's point of view.

In response to open-ended questions about "other" problems, recipients mentioned the inconvenience of picking up the check, having to show ID, amount of benefit being too low, checks arriving late or irregularly, paying check cashing fees, and problems with the caseworker.

Among both types of child support participants (NPACS and BCS), by far the most common "other" problem with checks was late or irregular payments. These comments most likely reflect the irregularity of payments made by the absent parent, rather than issuance problems per se.

Asked what they felt was the ***biggest*** problem with their public assistance checks, 85.8 of recipients said there was none. Among those who cited one, the most common responses were waiting for the check to arrive (2.5 percent) and checks arriving late or irregularly (2.0 percent).

In contrast, only 55.6 percent of NPACS participants said there was no biggest problem. The most commonly cited problem, mentioned by fully 29.3 percent, was that of child support checks arriving irregularly or late. Many of these problems may stem from the behavior of the noncustodial parent rather than the benefit delivery system, however.

BCS participants more closely resemble public assistance recipients than NPACS participants in this regard. Nearly 80 percent said there was no biggest problem and, while "checks arriving irregularly" was also the most frequently cited problem, it was mentioned by only 8.7 percent of BCS recipients.

Obtaining EBT Benefits. In the EBT system, the cash allotment is credited electronically to the recipient's cash account, and the recipient must make a trip to a cash access location to withdraw the cash. In Maryland, recipients can withdraw cash at ATMs participating in the MOST network, at food stores (with clerk assistance) and, in a limited number of areas, at banks with teller assistance. EBT cash access highlights are presented in Exhibit C.6.

Nearly all public assistance recipients received benefits by EBT card. In part this occurred because fewer public assistance recipients were even eligible for direct deposit (only bank account holders were eligible, and only 15.8 percent of public assistance recipients had

Table of Contents

EXHIBIT C.6

HIGHLIGHTS OF EBT CASH WITHDRAWAL PROCESS

	Public Assistance (n=682)	NPA Child Support (n=54)
Percent who receive benefits by:		
EBT	93.2	67.9
Direct deposit	6.3	17.2
Paper check	0.0	11.5
Percent of EBT card users who have bank account	10.1	35.8
Percent of bank account-holders who knew about direct deposit option	58.4	78.4
Place where most often withdraw cash (percent)		
ATM	74.3	74.7
Food store	22.7	23.5
Check-cashing store	1.3	0.0
Other store	0.9	0.0
Bank clerk	0.6	1.8
Other	0.2	0.0
Average number of withdrawals per month	2.4	2.8
ATM users	2.4	2.4
Food store users	2.3	4.4
Percent normally traveling to cash-access point by:		
Walking	48.2	42.0
Bus	11.7	10.0
Taxi	1.9	1.6
Driven by someone	20.9	3.5
Borrowed car	2.0	1.8
Own car	15.2	41.0
Other	0.1	0.0
Average one-way travel time (minutes)	11.8	10.5
Walking	11.4	7.8
Bus	21.7	27.1
Taxi	13.8	15.0
Driving	9.1	9.2
Average one-way travel time (minutes) to:	11.8	10.5
ATM	11.7	10.5
Food store	11.9	11.2
Average time to withdraw cash (minutes)	8.8	6.3
ATM	7.8	6.5
Food store	11.5	5.7

EXHIBIT C.6 (CONTINUED)

HIGHLIGHTS OF EBT CASH WITHDRAWAL PROCESS

	Public Assistance (n=682)	NPA Child Support (n=54)
Child care paid per trip		
Percent paying any	5.4	0.0
Average paid by those paying	$8.15	NA
Percent who have withdrawn cash (in last two months) at:		
ATM	85.4	79.4
Food store	46.1	28.3
Check-cashing store	5.5	5.1
Other store	2.9	0.0
Bank terminal with clerk assistance	3.4	1.8
Of those who have withdrawn cash at a food store, percent who did so ***mainly*** because:		
Food store is more conveniently located than ATM	36.2	100.0
Lines at ATMs are too long	7.2	0.0
Also wanted to buy something	34.3	0.0
Easier than ATM	3.2	0.0
Wanted a small withdrawal amount	16.6	0.0
Of those who used an ATM:		
Average number of times (in last two months)	3.3	3.3
ATM is located "near" home or work (percent)	90.2	97.7
ATM lines are longer at some times of month (percent)	42.7	45.6
ATM lines are longest at beginning of month (percent of those saying lines are longer at some times)	99.6	86.0
During most congested time of month:		
Average number of people in ATM line	21.6	21.6
Average wait (minutes)	27.5	19.2

Results weighted for nonresponse. Sample sizes are actual (unweighted). NA = not available (not asked). Percentage base for first question was full sample. All subsequent questions were asked of EBT cardholders only (643 PA recipients and 35 NPA participants.

Source: Post-Implementation Recipient Survey

bank accounts).[7] However, less than half of eligible public assistance recipients were even aware they had the option of direct deposit.

Among NPACS participants, only two thirds received benefits by EBT card, with the rest receiving it by direct deposit or continuing to receive it by check (NPACS participants were given this choice as well). Approximately one third of EBT card-holders had bank accounts.[8]

Three quarters of all cash recipients most often withdrew cash at ATMs, with most of the rest doing so at food stores. Regardless of their usual location—ATMs or food stores—public assistance recipients made approximately 2.4 withdrawals per month. NPACS recipient behavior at ATMs was similar.

Transportation particulars did not change much between the paper and EBT systems. Transportation modes and times to the usual cash access point were quite similar as to the modes and times for going to the check cashing location. Most recipients still walked or drove, with these modes of travel taking approximately 10 minutes. For NPACS participants, travel times were shorter to the EBT cash access point compared to the old check cashing location.

ATM users and food store users traveled for between 10 and 12 minutes, on average, to reach their destination. Once there, withdrawing cash took slightly less time at ATMs than food stores, probably because food store clients must wait in the checkout line. For NPACS participants, the average times are within a minute of each other, and are shorter than for public assistance recipients.

Regardless of their "usual" location, most recipients had used an ATM at some time in the previous two months. Food stores were the next most frequently cited locations. Relatively more public assistance than NPACS clients had used both ATMs and food stores. Other locations were very infrequently used. Those who had used a food store did so mainly because the food store was more conveniently located than an ATM, or because they also wanted

7. Among public assistance ***cardholders*** specifically, only 10 percent had bank accounts.

8. Overall, 48.8 percent of NPACS card-holders and direct deposit respondents had bank accounts. This figure is not comparable to the pre-implementation figure of 75 percent because it excludes NPA participants who continue to receive benefits by check (they were not asked about bank accounts).

Table of Contents

to buy something at the store. Those who had used an ATM did so an average of 3.3 times in the previous two months.[9]

One concern of program officials was that ATM access might pose a problem for some recipients. Overall, nearly all recipients said an ATM was located nearby (90.2 percent of public assistance recipients and 97.7 percent of NPACS participants). Nearly half said that ATM lines were longer during issuance week. During that time, wait times were reported to average nearly half an hour (20 minutes at ATMs used by NPACS participants)—compared to the 8-minute "usual usage" time reported by regular ATM users.

It is possible that the survey respondents have exaggerated the length of their ATM waits. According to ATM observation data, the average wait time at ATMs was about 5 minutes during issuance week. At high-volume EBT locations, the average wait was about 7 minutes. It is also conceivable that the survey responses could be correct: for example, assistance recipients might have clustered at the ATMs at about the same time, creating long waits, while other ATM users during other parts of the day brought down the observed average. Nonetheless, it seems likely that the participation costs estimated for ATM use are somewhat overstated.[10]

Problems with the EBT System. Problems associated with the EBT system in the previous two months are shown in Exhibit C.7. These are classified as problems with the card or system, and with the cash account specifically. The most common card or system-related problems were being unable to find the balance and losing the card.

Recipients who had withdrawn cash at ATMs and food stores were also asked a number of questions about problems withdrawing cash at these locations. The most common ATM problems mentioned were long lines (cited by 29.4 percent) and broken ATMs (17.7 percent).

With regard to withdrawing cash at food stores, equal shares of recipients noted that some stores impose limits on the withdrawal amount, or give part of the amount in the form of coupons that have to be spent in the store. As with ATMs, a large share of respondents (18.2

9. This figure includes recipients who do not "usually" use an ATM, and excludes transactions made at other locations in the same time period. A better usage indicator is the figure given for "usual" location.

10. Similar problems may exist for other elements of participation cost reported in the survey but for which we have no external corroboration. For this reason, we do not adjust the recipients' reported ATM wait times.

Table of Contents

EXHIBIT C.7

PROBLEMS WITH EBT CASH BENEFITS

Problem	Percent
Problems with the EBT card or system[a]	
Card damaged	4.6
Card lost	7.5
Card stolen	3.1
Unable to find out balance	8.9
Forgot PIN	3.3
Wrong account debited (of those with two EBT accounts)[b]	3.3
Unauthorized use by another	1.3
Problems with the cash account	
Withdrawing cash at ATMS[c]	
ATM withdrawal limits are a "big" problem	6.2
At least once in the past two months:	
ATM did not have enough money on hand	12.4
ATM was broken/did not work	17.7
Lines at ATM were very long	29.4
It was difficult to operate the ATM	5.1
ATM was inconvenient to get to	7.1
Withdrawing cash at food stores[d]	
At least once in the past two months:	
Store did not have enough money on hand	6.1
Store refused cash withdrawal	3.9
Lines to withdraw cash were very long	18.2
Terminal was difficult to operate	5.2
Store was inconvenient to get to	7.1
Last time cash was withdrawn at a food store:	
Store imposed a limit on amount of cash withdrawal	25.2
Store gave part of withdrawal amount in form of store coupons	25.2
Store required a minimum purchase	7.7
Store charged a fee for cash withdrawal	9.1

EXHIBIT C.7 (CONTINUED)

PROBLEMS WITH EBT CASH BENEFITS

Problem	Percent
Other EBT card/account problems[e]	
Forced cash withdrawal	0.1
Cash benefits credited late	7.5
Wrong amount credited	5.7
Less in account than expected (for other reasons than above)	2.6
Difficulty tracking cash balance	2.0
Other problems with cash account	1.8
Direct deposit problems[f]	
Account credited late	19.3
Wrong amount credited	9.9
Other problems with direct deposit	1.4

Percents are weighted for nonresponse.

[a] Percentage base is 723 respondents.
[b] Percentage base is 590 respondents with both cash and food stamp accounts.
[c] Percentage base is 577 respondents who withdrew cash at an ATM at least once in the past two months.
[d] Percentage base is 304 respondents who withdrew cash at a food store at least once in the past two months.
[e] Percentage base is 678 respondents with cash account on Independence card.
[f] Percentage base is 48 respondents with direct deposit.

Source: Post-Implementation Recipient Survey

percent) said lines to make cash withdrawals were very long (presumably most recipients must wait at the customer service counter). Other account-related problems were infrequently cited.

Approximately 74 percent of public assistance recipients stated there was no "biggest" problem with the way they received their cash benefits (not shown in Exhibit C.7). The most common responses among those who cited one were long lines to withdraw cash (7.8 percent) and difficulty withdrawing the exact desired amount (6.5 percent). Among NPACS participants, only 63.3 percent could not cite a biggest problem, but no problem was mentioned strikingly more often than others.

Food Expenditure Model

Exhibit C.8 presents the results from the regression analysis of the impacts of EBT on food expenditures among food stamp recipients. Food expenditures are measured on a per adult male equivalent (AME) basis, where the number of AMEs in a household is calculated based on estimated calorie requirements of each household member relative to the estimated requirements of an adult male.

EXHIBIT C.8

FOOD EXPENDITURE REGRESSION MODEL

	Food Expenditures per Adult Male Equivalent (AME)	
	Including Takeout Expenses	**Excluding Takeout Expenses**
EBT indicator	7.23 (8.19)	8.31 (8.00)
Food stamp allotment (per AME)	0.59* (0.04)	0.58* (0.04)
EBT × food stamp allotment (per AME)	-0.06 (0.05)	-0.08 (0.05)
Income (per AME)	0.07* (0.01)	0.06* (0.01)
EBT × income (per AME)	-0.05* (0.01)	-0.04* (0.01)
Household size	-5.68* (1.06)	-5.74* (1.04)
Urban resident	3.89 (2.86)	4.21 (2.79)
High school graduate	-1.19 (2.45)	-2.07 (2.40)
Non-white race	-5.46* (2.69)	-5.87* (2.62)
Children receive subsidized school meals	-0.18 (2.92)	-0.73 (2.85)
Received WIC benefits last month	7.23* (3.28)	6.32* (3.21)
Received USDA surplus commodities last month	-6.67 (4.10)	-6.47 (4.01)
Spent more than typical last month	7.95 (4.60)	6.92 (4.49)
Spent less than typical last month	-11.73 (6.54)	-11.48 (6.39)
Survey month in summer	6.94* (2.65)	7.11* (2.58)
Intercept	65.05* (7.70)	65.27* (7.52)

EXHIBIT C.8 (CONTINUED)

FOOD EXPENDITURE REGRESSION MODEL

	Food Expenditures per Adult Male Equivalent (AME)	
	Including Takeout Expenses	**Excluding Takeout Expenses**
Number of observations	1885	1885
R-square	0.249	0.253

Standard errors are in parentheses.

Source: Pre- and Post-Implementation Recipient Surveys

** Statistically significant at the 1 percent level.
* Statistically significant at the 5 percent level.
† Statistically significant at the 10 percent level.

APPENDIX D

LITERATURE REVIEWED ON PARTICIPATION MODELS FOR THE FOOD STAMP PROGRAM AND AFDC

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APPENDIX E

REGRESSION RESULTS FOR PARTICIPATION ANALYSIS

This appendix presents the full regression models referenced in Chapter Three. Four models (approvals, closures, caseload and average payments) are included for each of the following three programs: food stamps, AFDC and DALP.

EXHIBIT E.1

REGRESSION RESULTS FOR FOOD STAMP MODELS

	Estimated Coefficients for Each Model[a,b,c]							
Independent Variables	**Approvals**		**Closures**		**Caseload**		**Average Payments**	
EBT indicator	-0.85	(4.04)	-18.92	(10.28)†	410.9	(52.1)**	-3.11	(1.43)*
Unemployment rate			-7.47	(3.00)**	12.3	(1.65)**	0.13	(0.08)†
Unemployment rate$_{-1}$	2.37	(0.94)*[d]	0.61	(3.90)	21.8	(1.62)**	0.25	(0.08)**
Unemployment rate$_{-2}$	5.37	(0.99)**	4.65	(3.74)	11.8	(1.62)**	0.48	(0.07)**
Unemployment rate$_{-3}$	5.27	(1.01)**	-4.00	(3.83)	8.9	(1.62)**	-0.20	(0.08)*
Unemployment rate$_{-4}$	0.96	(0.95)	13.03	(3.85)**	9.5	(1.66)**	-0.26	(0.08)**
Unemployment rate$_{-5}$			1.46	(3.78)	7.4	(1.59)**	-0.34	(0.07)**
Unemployment rate$_{-6}$			5.33	(3.36)	-0.3	(1.71)	0.24	(0.08)**
Migrant worker indicator	174.39	(24.1)**	654.10	(78.4)**	273.5	(47.2)**		
Q2	-23.31	(2.76)**	18.00	(7.32)*	-22.5	(5.90)**	2.32	(0.26)**
Q3	-11.51	(2.48)**	6.93	(6.89)	-30.5	(5.61)**	-3.22	(0.23)**
Q4	6.25	(2.69)*	-21.70	(7.54)**	-13.4	(11.20)	2.11	(0.40)**
October 1989							5.12	(1.18)**
October 1990							6.05	(1.13)**
October 1991							3.93	(1.07)**
AFDC benefit level							-0.09	(0.01)**
Number of observations	2,088		1,987		2,050		2,050	
Mean of the dependent variable	254.7		684.4		3420.5		171.84	

[a] Standard errors are in parentheses.

[b] All models include fixed jurisdiction and year effects as explained in Section 3.4. For a description of the dependent and independent variables, see Section 3.4 and Exhibit 3.5.

[c] All variables in approvals, closures, and caseload models (including means of the dependent variables) are multiplied by 10^4 to make coefficients easier to read.

[d] For the food stamp approvals model, the change in the unemployment rate is used, rather than the level of the unemployment rate. Four monthly changes are included.

** Statistically significant at the 1 percent level.
* Statistically significant at the 5 percent level.
† Statistically significant at the 10 percent level.

EXHIBIT E.2

REGRESSION RESULTS FOR AFDC MODELS

	Estimated Coefficients for Each Model[a,b,c]							
Independent Variables	**Approvals**		**Closures**		**Caseload**		**Average Payments**	
EBT indicator	-0.03	(4.42)	-0.40	(7.74)	267.1	(52.1)**	-2.01	(1.18)†
Unemployment rate	-4.72	(1.61)**	-9.47	(2.88)**	12.2	(2.33)**	0.16	(0.12)
Unemployment rate$_{-1}$	7.04	(2.19)**	-7.41	(3.83)†	22.9	(2.35)**	0.20	(0.12)†
Unemployment rate$_{-2}$	-0.48	(2.12)	7.15	(3.61)*	28.0	(2.32)**	0.14	(0.12)
Unemployment rate$_{-3}$	-8.46	(2.18)**	-9.76	(3.70)**	13.0	(2.34)**	0.17	(0.12)
Unemployment rate$_{-4}$	-2.87	(2.18)	9.80	(3.79)**	6.0	(2.41)*	0.03	(0.12)
Unemployment rate$_{-5}$	-5.21	(2.11)*	0.69	(3.61)	6.2	(2.30)**	-0.77	(0.11)**
Unemployment rate$_{-6}$	1.51	(1.75)	1.96	(3.23)	6.4	(2.44)**	0.28	(0.12)*
Q2	5.45	(3.07)†	11.07	(5.89)†	17.7	(6.25)**	-3.16	(0.40)**
Q3	25.49	(2.88)**	16.48	(5.40)**	-16.6	(5.98)**	-0.56	(0.39)
Q4	30.05	(3.07)**	-1.43	(5.91)	-12.1	(11.59)	2.28	(0.56)**
July 1989							-0.43	(1.28)
July 1990							-4.69	(1.08)**
December 1991							-9.81	(1.17)**
November 1992							0.49	(1.41)
July 1993							-1.83	(1.08)†
Number of observations	2,077		2,042		2,039		1,755	
Mean of the dependent variable	275.1		495.4		5757.9		325.2	

[a] Standard errors are in parentheses.

[b] All models include fixed jurisdiction and year effects as explained in Section 3.4. For a description of the dependent and independent variables, see Section 3.4 and Exhibit 3.5.

[c] All variables in approvals, closures, and caseload models are multiplied by 10^4 to make coefficients easier to read.

** Statistically significant at the 1 percent level.
* Statistically significant at the 5 percent level.
† Statistically significant at the 10 percent level.

EXHIBIT E.3

REGRESSION RESULTS FOR DALP MODELS

	Estimated Coefficients for Each Model[a,b,c]			
Independent Variables	**Approvals**	**Closures**	**Caseload**	**Average Payments**
EBT indicator	4.32 (1.09)**	-0.70 (31.41)	-5.32 (9.07)	1.55 (1.96)
Unemployment rate	0.55 (0.26)*	48.71 (12.69)**	-0.21 (0.31)	0.38 (0.42)
Unemployment rate$_{-1}$	0.40 (0.33)	25.69 (15.87)	0.08 (0.30)	-0.42 (0.47)
Unemployment rate$_{-2}$	0.73 (0.32)*	-16.57 (14.74)	1.55 (0.30)**	1.30 (0.45)**
Unemployment rate$_{-3}$	0.43 (0.33)	-40.79 (15.14)	0.36 (0.29)	0.63 (0.49)
Unemployment rate$_{-4}$	0.13 (0.33)	38.21 (15.71)*	-0.05 (0.31)	0.11 (0.46)
Unemployment rate$_{-5}$	0.18 (0.32)	-22.44 (14.78)	-0.59 (0.29)*	-1.22 (0.44)**
Unemployment rate$_{-6}$	0.40 (0.28)	9.90 (14.27)	-0.21 (0.32)	1.18 (0.45)**
Q2	-3.11 (0.72)**	191.2 (25.65)**	-11.45 (1.32)**	-5.06 (1.10)**
Q3	-2.10 (0.69)**	154.3 (23.02)**	-4.37 (1.26)**	-1.08 (1.03)
Q4	-2.00 (0.69)**	35.3 (26.55)	-1.13 (2.27)	3.33 (1.27)**
July 1989				-0.58 (2.31)
July 1990				4.24 (2.16)*
December 1991				-0.55 (2.84)
May 1992				-4.04 (2.28)†
November 1992				6.85 (2.30)**
July 1993				-1.55 (1.86)
Number of observations	2,076	1,560	1,560	1,559
Mean of the dependent variable	58.3	1263.5	329.0	163.42

[a] Standard errors are in parentheses.

[b] All models include fixed jurisdiction and year effects as explained in Section 3.4. For a description of the dependent and independent variables, see Section 3.4 and Exhibit 3.5.

[c] All variables in approvals, closures, and caseload models are multiplied by 10^4 to make coefficients easier to read.

** Statistically significant at the 1 percent level.
* Statistically significant at the 5 percent level.
† Statistically significant at the 10 percent level.

APPENDIX F

METHODS FOR ESTIMATING EBT SYSTEM IMPACTS ON PARTICIPATING RETAILERS

This appendix discusses several important details pertaining to the analysis of retailer costs presented in Chapter Four. We first discuss our procedures for estimating checkout costs. Next, we discuss our analysis of all other retailer cost categories. This latter discussion includes an explanation of the final disposition of retailer survey samples, and methods used to compute sample weights and impute missing values.

F.1 CHECKOUT PRODUCTIVITY COSTS

In Chapter Four we present estimates of retailer costs to transact sales at the checkout counter. Additional information regarding the data collection procedures and methodology behind those estimates is provided in this section.

Data Collection

Almost 12,000 checkout observations were conducted over two waves of observation. The pre-implementation wave of observations occurred in March through June 1992, and the post-implementation wave occurred in June through September 1993. During each round, 45 stores were visited—15 supermarkets, 15 grocery stores, and 15 convenience stores. Within each store type, stores were chosen using probability-proportionate-to-size (PPS) sampling, which gives a greater chance of selection to stores with a larger "size." In this case, the measure of size was monthly food stamp redemption levels.

Both waves of observations occurred during peak food stamp issuance periods, at the beginning of each month, to maximize the number of food stamp coupon and EBT transactions the observers would record. Whenever possible, the same stores were visited during both rounds of observations, but in four cases this was not possible. For the post-implementation wave of observations, one of the originally sampled convenience stores had closed, one convenience store refused to participate, one grocery store decided not to participate in the EBT

Table of Contents

demonstration, and one grocery store was suspended for program violations. These stores were replaced with stores of the same type with comparable food stamp redemption levels.

During each wave of observations, one observer spent one day in each store, resulting in 45 person-days of observations per wave. These days were divided into twelve 30-minute segments. At the beginning of each segment, the observer noted the number of checkout counters open at the time, whether the observed checkout counter was an "express lane," and whether the observed counter was equipped with a bar code scanner. If there was more than one counter open at the beginning of the segment, the observer used a random number table to determine which of the counters would be observed. Once an observation segment began, the observer used a stopwatch to note the beginning and ending times of each purchase, and the start and end times for EBT transmission and printing. Additionally, the observer noted any time-consuming events that occurred during the purchase, such as produce weighing and ringing errors. Any EBT-related events, such as balance checks or card reswipes, were also recorded for EBT transactions.

Of the almost 12,000 observations included in the analysis file,[1] 589 were food stamp EBT purchases and 844 were food stamp coupon purchases (see Exhibit F.1 for the distribution of transactions by store type and payment type). Many fewer food stamp coupon and EBT transactions were recorded in convenience stores than in the other store types. In addition, even after EBT had been implemented, the observers continued to see a relatively large number of food stamp coupon transactions.

Methodology

As described in Chapter Four, we estimated the impact of the EBT system on retailers' checkout costs using a five-step process. We:

- Performed regression analyses;
- Computed the average time for a typical purchase;

1. Several types of transactions were excluded from the analysis file. All transactions involving vouchers for the Women, Infants and Children (WIC) program were excluded because such transactions require a lengthy payment process matching WIC vouchers to specific food items. Purchases made at combined convenience stores/gasoline stations that included gasoline also were excluded, as were any transactions where no food was purchased (e.g., customers buying only money orders or lottery tickets).

Table of Contents

EXHIBIT F.1

NUMBER OF TRANSACTIONS IN THE ANALYSIS SAMPLE, BY WAVE, PAYMENT TYPE, AND STORE TYPE

	Convenience Stores	Grocery Stores	Supermarkets	Total
Pre-Implementation Sample				
Food stamp coupon only	35	371	246	652
Food stamp and cash	3	31	58	92
Food stamp and other	0	1	39	40
Food stamp EBT only	1	0	25	26
Food stamp EBT and cash	0	0	0	0
Food stamp EBT and other	0	0	0	0
EBT cash assistance only	0	0	0	0
EBT cash assistance and cash	0	0	0	0
EBT cash assistance and other	0	0	0	0
EBT cash assistance and EBT food stamp	0	0	0	0
Other	2,759	1,768	1,728	6,255
Total	2,798	2,172	2,096	7,065
Post-Implementation Sample				
Food stamp coupon only	1	34	17	52
Food stamp and cash	0	1	5	6
Food stamp and other	0	0	2	2
Food stamp EBT only	64	177	215	456
Food stamp EBT and cash	10	7	27	44
Food stamp EBT and other	0	0	53	53
EBT cash assistance only	0	1	1	2
EBT cash assistance and cash	0	0	0	0
EBT cash assistance and other	0	0	1	1
EBT cash assistance and EBT food stamp	0	2	7	9
Other	2,075	933	1,228	4,236
Total	2,150	1,155	1,556	4,861

EXHIBIT F.1 (CONTINUED)

NUMBER OF TRANSACTIONS IN THE ANALYSIS SAMPLE, BY WAVE, PAYMENT TYPE, AND STORE TYPE

	Convenience Stores	Grocery Stores	Supermarkets	Total
Total Sample				
Food stamp coupon only	36	405	263	704
Food stamp and cash	3	32	63	98
Food stamp and other	0	1	41	42
Food stamp EBT only	65	177	240	482
Food stamp EBT and cash	10	7	27	44
Food stamp EBT and other	0	1	53	54
EBT cash assistance only	0	1	1	2
EBT cash assistance and cash	0	0	0	0
EBT cash assistance and other	0	0	1	1
EBT cash assistance and EBT food stamp	0	2	7	9
Other	4,834	2,701	2,956	10,491
Total	4,948	3,327	3,652	11,926

Table of Contents

- Computed the average incremental cost per transaction;
- Computed the cost per $1,000 of food stamp benefits redeemed; and
- Presented estimated final impacts of the EBT system on retailers' checkout costs.

The first two steps are described in detail below. The last three steps are fully outlined in Chapter Four, with the exception of our methods to discount the final impacts using unproductive cashier time, which are discussed below.

Regression Analyses. Separate regression models were fit for each of the three store types. The dependent variable in each model is the total transaction time, and each observation in the model represents a purchase transaction by a single customer. Except for the total number of items and two interaction variables for the total number of items and bagging procedure, all of the variables in the model are dichotomous (indicator) variables. Exhibit F.2 presents a complete list of the explanatory variables used in the regression analysis.

Payment Variables. Eleven dichotomous payment variables are included in each model.[2] These payment variables are mutually exclusive, and cover all payment types observed, except cash. Cash is the omitted category. Three variables measure the use of food stamp coupons (alone, with cash, or with another type of payment such as checks). Four variables measure the use of a food stamp EBT card (alone, with cash, with another type of payment, or in conjunction with a cash assistance EBT account). Two other variables measure the use of a cash assistance EBT card (alone or with some other form of payment). The last two payment variables indicate if only a check was used to pay for the purchase, and if both cash and manufacturer's or store coupons were used to pay for the purchase (measuring the additional time required to handle the coupons, over cash).

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2. A handful of debit card transactions were observed but not included in the analysis sample. Transactions involving commercial debit cards were excluded because: there were so few observed; transaction times using a commercial debit card are not necessarily of equal length to an EBT transaction because the transaction is processed by a different system; and transaction times with commercial debit cards are not of direct interest to the evaluation of EBT system impacts on checkout productivity.

In some situations the observer could not determine whether the card being used was an EBT card or a commercial debit card. These transactions also were excluded to ensure that the estimated EBT coefficients accurately portray the effects of using an EBT card on transaction times. In instances where the observer could identify that an EBT card was being used, but could not determine whether the transaction was being applied against a food stamp or cash assistance account, the transactions were excluded because of the uncertainty surrounding how they should be classified.

EXHIBIT F.2

EXPLANATORY VARIABLES IN THE REGRESSION ANALYSIS

Variables Indicating Form of Payment (all indicators)

Constant (represents payment in cash)

Food stamp coupons only
Food stamp coupons and cash
Food stamp coupons and other

EBT card for food stamp benefits only
EBT card for food stamp benefits, plus cash
EBT card for food stamp benefits, plus cash
EBT card for cash assistance benefits only
EBT card for cash assistance benefits, plus other
EBT card for both food stamp and cash assistance benefits

Check written only
Manufacturer's or store coupons used, in addition to cash

Variables Involving the Number of Items Purchased

Number of items purchased
Number of items purchased, when only cashier does bagging
Number of items purchased, when no bagging takes place

Events During Ringing (all indicators)

Price checks
Produce weighing
Express lane observation
No bar code scanner used
"Penny candy" transaction (average price per item less than or equal to 40 cents)

Variables Indicating Problems or EBT-Specific Procedures (all indicators)

Ringing problem (non-EBT)
Other non-EBT-related problem
Extra long transaction (observer noted transaction was unusually long, but no specific problem noted)
Client used EBT system to check remaining balance
Voucher EBT transaction required
Presence of any other problem with EBT system

Other Variables (all indicators)

A series of variables identifying store in which transaction was observed

Variables Involving the Number of Items Purchased. The second set of variables included in the model indicate the number of items purchased, and the interaction between the number of items purchased and the type of bagging provided. The interaction variables estimate the time associated with each item purchased if the bagging was done by the cashier, or if no bagging was done. Bagging by the customer or by a separate bagger is the omitted category for these interaction variables.

Events During Ringing. Each day of observation was divided into 12 30-minute periods. At the beginning of each segment, the observer indicated whether or not the counter was an express lane, and if a bar code scanner was used. In the analysis file, these two variables were attached to each observation recorded during that period, and were entered into the model using two dichotomous variables.

Eight variables indicate if something occurred during the transaction that would directly affect the checkout time. These variables measure the occurrence of: price checks, produce weighing, ringing errors, other problems (such as item returns), extra-long transactions (as noted by the observer, with no specific problem associated with the delay), and "candy" purchases. All but the candy variable indicate an event that might cause a longer transaction time. A transaction was defined as a "candy" purchase if the average price per item was less than or equal to 40 cents. This variable captures very quick purchases—candy and newspapers, in particular—involving the exchange of very little money.

Variables Indicating EBT-Specific Problems or Procedures. Three variables in the model indicate if an EBT-related event occurred during the transaction. One indicates if the client used the EBT system to check remaining balance; one indicates that a voucher (manual) EBT transaction was required because the system was down; and one indicates the presence of any other problem with EBT system (such as card reswipes or a client forgetting his or her PIN).

Store Variables. The last set of dichotomous variables in the model indicate the store in which the transaction took place. These variables account for the considerable variation in checkout times between stores. We cannot explain why this variation exists, but it is clear that some stores process transactions much more quickly than do others, and it is therefore important to account for this variation in the model. One store is left out of each model. The constant term of the model captures the influence of the omitted store.

Table of Contents

procedures in such stores (which include produce stands and milk routes in sizable percentages) would make it very difficult to isolate an EBT effect. For the purposes of estimating changes in other stores' ***total*** operating costs due to EBT, we have assigned EBT's estimated impact on convenience store checkout productivity to the other store category.

In August 1993, "other" stores represented only 489 (16.3 percent) of the 2,996 FNS-authorized retailers in Maryland. Less than 5 percent of all food stamp EBT redemptions were processed through these stores.

Weights for All Store Results. Food stamp transactions across the three store types included in the checkout observations were not observed with equal probability. Thus, in estimating an overall impact of EBT on checkout productivity across all stores, we need to weight the results estimated for individual store types.

In constructing the weights, we divided monthly food stamp EBT redemption volumes (aggregated by store type, for all four store types) by the average observed purchase size of a food stamp EBT transaction. (We assumed that average purchase amount in "other" stores is the same as in convenience stores.) This calculation yielded an expected number of food stamp EBT transactions across all stores of each store type. These expected numbers, after being standardized to sum to unity, became the weights for deriving EBT impacts on checkout productivity across all stores.

The aggregate EBT volumes, average purchase amount, expected numbers of observations, and weights are given below in Exhibit F.3.

Regression Results. In all store types, it takes significantly longer to process food stamp coupon transactions and EBT transactions than to process cash transactions (see Exhibit F.4).[3] Among all store types it takes longer to process an EBT transaction than a food stamp coupon transaction, compared to the time it takes for cash. Supermarket staff process transactions involving only food stamp EBT more efficiently than do the staff of the other store

3. Several estimated coefficients in each model are shaded. This shading indicates that ten or fewer observations within that store type exhibited the characteristic defined by the explanatory variable. The values of the shaded coefficients should be interpreted with caution, even when they are statistically significantly different from zero. A large coefficient could easily result from only one transaction being of long duration. Normally, when faced with small samples exhibiting a particular characteristic, one would exclude the observations from the sample and drop the explanatory variable from the model. This has not been done because, ultimately, we want to present an accurate picture of the overall impact of EBT on checkout costs, even though components of that overall effect may be based on small samples.

EXHIBIT F.3

CHECKOUT OBSERVATION WEIGHTS

	Super-markets	Grocery Stores	Convenience Stores	Other Stores	Total
EBT redemption volume (Aug. 93)	$18,836,368	$4,949,145	$921,334	$1,240,080	$25,946,927
Average purchase amount	$25.68	$28.06	$6.57	$6.57	$20.94
Expected number of sales	733,503	176,377	140,233	188,749	1,238,863
Weight	0.5921	0.1424	0.1132	0.1524	1.0000

types (23.1 seconds, compared to 48.6 for grocery stores and 45.4 seconds for convenience stores), but it takes slightly more time for supermarket staff to process transactions involving both EBT and cash (55.7 seconds, compared to 39.4 seconds and 30.9 seconds, respectively).

Exhibit F.5 compares the differences in estimated food stamp EBT and coupon coefficients. When only food stamp benefits are used to pay for a purchase, EBT takes significantly longer than coupons in grocery stores (28 seconds longer) and in convenience stores (14.1 seconds longer). This difference in the coefficients is not significant among supermarkets. When both food stamp benefits and cash are used to pay for a purchase, there is a significant difference in checkout time between food stamp EBT and coupons only among convenience stores (32.5 seconds).

In addition to this normal processing time, EBT-related events and problems can add more time to EBT purchases. Among supermarkets and grocery stores, balance checks add approximately one minute to the total checkout time (see Exhibit F.4). "Other EBT problems" can add even more time: 117 seconds in supermarkets, 99.9 seconds in grocery stores, and 38.7 seconds in convenience stores. Overall, an EBT-related problem occurred in 13.2 percent of cases (see Exhibit F.6).[4] A system-related problem occurred in a majority of those cases: while problems related to store procedures occurred in 2.5 percent of cases, and problems

4. This analysis is not performed at the store type level due to the limited number of observed problems.

EXHIBIT F.4

REGRESSION MODELS FOR TOTAL TRANSACTION TIME
(in seconds)

Explanatory Variable	Supermarkets	Grocery Stores	Convenience Stores
Constant (represents payment in cash)	28.1**	17.6**	14.6**
Food Stamp (FS) coupon only	19.4**	11.4**	16.8**
FS coupons and cash	45.2**	29.7**	12.9
FS coupons and other	103.7**	-6.1	—
EBT, FS only	23.1**	39.4**	30.9**
EBT, FS and cash	55.7**	48.6**	45.4**
EBT, FS and other	60.0**	16.1	—
EBT, cash assistance (CA) only	114.3**	10.2	—
EBT, CA and other	154.4**	—	—
EBT, FS and CA	1.0	105.2**	—
Check only	36.2**	52.5**	19.8**
Other coupons and cash	19.0**	6.6	—
Number of items	3.7**	3.7**	2.7**
Items, only cashier bagging	0.7**	-0.3	2.0**
Items, no bagging	-1.5	-1.5†	0.4
Price checks	51.3**	3.5	23.6**
Produce weighing	16.5**	29.3**	0.6**
Express lane	-8.5**	—	—
No scanner	-11.6**	6.1	—
Candy purchase	-22.3**	-11.3**	-8.6
Ringing problem (non-EBT)	45.2**	5.2	28.2**
Other problem (non-EBT)	20.0**	14.6**	21.6**
Extra long transaction	63.8**	67.2**	40.4**
EBT balance check	62.2*	66.5†	—
EBT backup transaction	94.2**	13.9	—
Other EBT problem	117.0**	99.9**	38.7**

EXHIBIT F.4 (CONTINUED)

REGRESSION MODELS FOR TOTAL TRANSACTION TIME
(in seconds)

Explanatory Variable	Supermarkets	Grocery Stores	Convenience Stores
Store A	24.2**	2[illegible]**	2.1
Store B	4.4	37.6**	2.5†
Store C	-1.2	-8.4**	-3.5**
Store D	-13.0*	5.8*	-4.8**
Store E	9.7†	17.1**	13.9**
Store F	27.0**	0.7	4.1**
Store G	-15.7*	-0.4	5.8**
Store H	15.9**	11.9*	3.6*
Store I	9.7†	16.2**	9.2**
Store J	-2.5	-3.7	6.4**
Store K	7.7	68.7**	21.6**
Store L	13.8**	25.8**	-2.8*
Store M	16.1**	-6.5*	-0.7
Store N	8.1	0.74	11.6**
Store O	7.8	-4.7	—
Store P	—	31.9**	—
Adjusted R^2	0.75	0.58	0.39
Mean of dependent variable	105.4	54.6	30.7
Std. Dev. of dependent variable	110.2	58.8	26.0
Total number of transactions (pre and post)	3,652	3,327	4,948
Number of FS coupon transactions	367	438	39
Number of EBT transactions	327	187	75

** Statistically significant at the 1 percent level
* Statistically significant at the 5 percent level
† Statistically significant at the 10 percent level
▒ Estimated coefficient is based on 10 or fewer observations
— No observations with this characteristic

Source: Pre-implementation and post-implementation checkout observation surveys.

Table of Contents

EXHIBIT F.5

DIFFERENCES IN ESTIMATED FOOD STAMP EBT AND COUPON COEFFICIENTS
(seconds per transaction)

Payment Type	Supermarkets	Grocery Stores	Convenience Stores
EBT, food stamps (FS) only	23.1	39.4	30.9
FS coupons only	19.4	11.4	16.8
Difference	3.7	28.0**	14.1**
EBT, FS and cash	55.7	48.6	45.4
FS coupons and cash	45.2	29.7	12.9
Difference	10.5	18.9	32.5†

** Statistically significant at the 1 percent level
* Statistically significant at the 5 percent level
† Statistically significant at the 10 percent level
▒ Estimated coefficient is based on ten or fewer observations

Source: Exhibit F.3.

related to recipient procedures occurred in 2.3 percent of cases, system/equipment/card problems occurred in 11 percent of cases. However, most of the system-related problems were merely card reswipes (7.3 percent), where the recipient had to pass his or her card through the reader more than once.

In the regression results, "other EBT-related problems" lead to large increases in checkout time in both grocery stores and supermarkets: this is primarily due to a small number of highly problematic transactions. During these transactions, there were multiple card reswipes, and in a few instances the entire system went down during the purchase, necessitating a voucher transaction in addition to the processing time that already occurred. One EBT-related problem occurred in 9.3 percent of the transactions, two problems occurred in 3.2 percent of the transactions, and three or more problems occurred in 0.7 percent of EBT transactions. Multiple EBT events are relatively rare, but they create long delays when they do occur.

EXHIBIT F.6

PERCENTAGE OF FOOD STAMP EBT TRANSACTIONS IN WHICH PROBLEMS OR BALANCE CHECKS WERE OBSERVED[a]

Problem	Percentage Incidence
System/Equipment/Card	
Equipment problem	0.6%
System inaccessible[b]	0.5
Card reswipe	7.6
Damaged card	0.0
Slowdown	2.5
Voucher transaction	1.2
Client sent to another lane	0.0
Subtotal[c]	11.1
Store Procedures	
Terminal sign-on	0.2
Cashier confused	1.0
Entry error	1.3
Next customer taken	0.3
Client sent to service desk	0.0
Subtotal[c]	2.6
Recipient Procedures	
Insufficient balance	0.6
Balance check	0.9
Forgot PIN	0.9
Subtotal[c]	2.5
Non-Specified Problem	0.2
Total All Problems[c]	13.3
Number of food stamp EBT transactions	589

[a] Percentages based on transaction-weighted frequencies of problem EBT transactions in supermarkets, grocery stores and convenience stores. These percentages simply reflect the frequency at which the problem or event was observed, and are not intended to be used as measures of system performance. Other measures, such as number of minutes of system availability, more accurately reflect the performance of the systems.

[b] Indicates that some part of the system (e.g., communication, host computer) is not available to process a transaction on-line.

[c] Indicates percentage of transactions in which one or more of the problems in the category were observed. Percentages do not add to subtotal or total level because of the occasional presence of more than one problem in a given transaction.

Average Time for a Typical Purchase. A profile of the "typical" food stamp EBT purchase transaction is defined using the average characteristics of all observed food stamp EBT transactions. This profile is presented in Exhibit F.7, by store type and for all stores. Each estimate in the profile is the mean value of that variable for all food stamp EBT transactions: in the case of indicator variables, the estimate reflects the percentage of EBT transactions having that characteristic. For example, recipients checked their balances during 0.8 percent of EBT transactions—1.2 percent did so during supermarket transactions, 0.5 percent during grocery store transactions, and none did so during convenience store transactions.

To estimate the average transaction time for an EBT purchase, we multiplied the characteristics of the typical food stamp EBT transaction by the estimated coefficients from the corresponding regression model. This provides the average total time for the typical food stamp EBT transaction, which is shown in Chapter Four, Exhibit 4.6.

Two sets of changes are made to the profile to get the average total time for the same transaction using food stamps. First, we changed the proportion of cases having the various payment types. We replaced the proportion of EBT transactions involving only food stamps with the proportion of coupon transactions involving only food stamps. We also replaced the proportion of EBT transactions involving food stamps and cash with the proportion of food stamp transactions involving food stamps and cash.[5] The proportion of "food stamp and other" transactions was handled in the same way. Second, we set the proportion of transactions experiencing EBT problems to zero, because such problems cannot occur when a recipient uses food stamp coupons. Using this process, we are able to predict the average amount of time it would take to process a typical food stamp transaction if coupons were used instead of the EBT card.

To predict the amount of time it would take to process the same transaction using cash, we set all of the EBT and food stamp payment terms and all of the EBT problem terms to zero. The constant term expresses the influence of using cash only as payment. The results of this process are provided in Exhibit 4.6 in Chapter Four.

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5. The "EBT card, FS and CA" line in the profile was set to zero for food stamp transactions, because all combination food stamp EBT debit and cash assistance EBT debit transactions would have been food stamp and cash transactions under the food stamp coupon system. Those transactions are counted under "food stamp plus cash."

EXHIBIT F.7

PROFILE OF THE TYPICAL FOOD STAMP EBT TRANSACTION[a]

	Supermarkets	Grocery Stores	Convenience Stores	All Stores[b]
FS coupons only	0.000	0.000	0.000	0.000
FS coupons and cash	0.000	0.000	0.000	0.000
EBT card, FS only	0.734	0.947	0.867	0.788
EBT card, FS plus cash	0.083	0.037	0.133	0.082
EBT card, FS plus other	0.162	0.005	0.000	0.114
EBT card, CA only	0.000	0.000	0.000	0.000
EBT card, CA plus cash	0.000	0.000	0.000	0.000
EBT card, FS and CA	0.021	0.011	0.000	0.016
Check written	0.000	0.000	0.000	0.000
Other coupons used	0.000	0.000	0.000	0.000
Number of items	22.580	12.518	3.987	18.407
Items, only cashier bagging	16.504	10.958	3.205	13.796
Items, no bagging	0.054	0.233	0.449	0.137
Price checks	0.063	0.005	0.000	0.045
Produce weighing	0.234	0.085	0.026	0.181
Express lane	0.069	—	—	0.048
No bar code scanner	0.216	0.571	—	0.247
Penny candy	0.015	0.016	0.039	0.018
Ringing problem (non-EBT)	0.012	0.000	0.000	0.008
Other problem (non-EBT)	0.048	0.005	0.013	0.036
Extra long transaction	0.021	0.011	0.000	0.016
EBT balance check	0.012	0.005	0.000	0.009
Backup EBT transaction	0.009	0.037	—	0.012
Other EBT problem	0.129	0.101	0.077	0.117

Table of Contents

EXHIBIT F.7 (CONTINUED)

PROFILE OF THE TYPICAL FOOD STAMP EBT TRANSACTION[a]

	Supermarkets	Grocery Stores	Convenience Stores	All Stores[b]
Store A	0.003	0.037	0.000	
Store B	0.045	0.095	0.051	
Store C	0.039	0.000	0.154	
Store D	0.000	0.037	0.038	
Store E	0.135	0.058	0.051	
Store F	0.138	0.148	0.064	
Store G	0.0006	0.000	0.041	
Store H	0.165	0.376	0.000	
Store I	0.126	0.069	0.038	
Store J	0.009	0.000	0.077	
Store K	0.030	0.148	0.051	
Store L	0.006	0.000	0.128	
Store M	0.129	0.000	0.000	
Store N	0.165	0.000	0.026	
Store O	0.000	0.000	—	
Store P	—	0.032	—	
Number of observations	327	187	75	589

[a] Each entry gives the mean value for that variable over all food stamp EBT transactions in the particular store type. For indicator variables, the entry is simply a proportion. With the exception of the three "item" variables, all variables are indicator variables.

[b] Weighted average across all three store types. Not interpretable for the store dummy variables because, for example, Store A in the supermarket sample is not the same store as Store A in the grocery store sample.

— Indicates that variable was excluded from regression model.

Discounted Costs per $1,000 of Food Stamp Benefits Redeemed. In Chapter Four, we present a full and a discounted estimated cost per $1,000 food stamp benefits redeemed. The cost was discounted based on the prevalence of unproductive cashier time observed between transactions. The methods and rationale behind this discount are presented in this section.

During slow periods, the cashier may have time between customers. That time may be used productively to stock items or total up receipts, or it may be unproductive time when the cashier simply waits for the next customer. If this time is unproductive, then the extra time required to process an EBT transaction may keep the cashier busy until the next customer, with no added cost to the store. In general, we think that at least some portion of this "wait" time is productive, and that some portion is slack time, but the proportion of each is unknown. By producing a discounted cost estimate (which accounts for this slack time entirely), and a full cost estimate (which takes no slack time into account), we provide a complete range of the impact that the EBT system has on checkout productivity costs.

EXHIBIT F.8

PERCENTAGE OF FOOD STAMP COUPON AND EBT TRANSACTIONS THAT ARE FOLLOWED BY ANOTHER TRANSACTION WITHIN 20 SECONDS

	Supermarkets	Grocery Stores	Convenience Stores	All Stores[a]
EBT Transactions	74.1	55.8	43.5	63.4
Coupon Transactions	73.3	55.4	54.0	65.6

[a] Weighted average.

Our measure of unproductive time is the percentage of food stamp coupon and EBT transactions that are followed by another transaction within 20 seconds. This 20 second cut-off has been used in previous analyses of EBT system impacts on checkout productivity. A delay of less than 20 seconds between customers leaves very little unproductive time. Exhibit F.8 presents the percentage of transactions with a wait time of less than or equal to 20 seconds. Supermarkets appear to be the busiest: almost three-quarters of food stamp EBT and coupon transactions are followed by another transaction within 20 seconds, compared to just over half

Table of Contents

of the transactions in grocery stores, and approximately half of convenience store transactions (43.5 percent of EBT transactions and 54 percent of food stamp coupon transactions).

These percentages are multiplied by the corresponding costs per $1,000 of food stamp benefits redeemed in Exhibit 4.9, resulting in the reduced costs per $1,000 of food stamp benefits redeemed, for food stamp coupon and EBT transactions (see numbers in parentheses in Exhibit 4.9). These two cost estimates (full and reduced) provide a range for our estimate of the impact of the EBT system on retailer's checkout costs in Maryland.

F.2 Analysis of Other Retailer Cost Categories

Final Disposition of Retailer Samples

Our analysis of the remaining cost categories—handling, training, reshelving, float, accounting errors, space, and fee costs—is based on retailer responses to our pre- and post-implementation surveys. We employed a two-stage procedure for sampling Maryland retailers. In the first stage, we sampled clusters, or geographic areas classified by zipcodes. In the second stage, we sampled stores within these clusters. The two surveys were longitudinal. In the post-implementation survey, however, we added stores in Cecil and Montgomery Counties and the Park Circle district of Baltimore—areas that were not included in the pre-implementation survey because EBT had already been implemented.

In Exhibits F.9, F.10, and F.11, we describe the final disposition of the three retailer samples used in our analysis. These three exhibits describe, respectively, the full pre-implementation sample, the full post-implementation sample, and the subsample of retailers in both pre- and post-implementation samples. As these exhibits explain, our initial sample decreased in size because we learned that some retailers had gone out of business, while others never used EBT and were therefore not relevant to our study. Of the remaining eligible stores, some did not complete our survey questionnaire. Incomplete surveys occurred because respondents refused to participate, because we could not locate a person to respond to the survey, or because of other reasons, such as a language barrier between survey staff and respondent. We could only analyze the costs of retailers with completed surveys—210 in the full pre-implementation sample, 170 in the full post-implementation sample, and 150 in the subsample of retailers in both pre- and post-implementation samples.

EXHIBIT F.9

FINAL DISPOSITION OF SAMPLES OF RETAILERS IN THE PRE-IMPLEMENTATION SAMPLE

	All Stores	Store Type			
		Super-markets	Grocery Stores	Convenience Stores	Other Stores
Total Sample	317	48	65	63	141
Total Ineligible	44	3	8	7	26
Out of Business	28	3	7	3	15
No EBT Use	16	0	1	4	11
Total Eligible (Total Sample—Ineligibles)	273	45	57	56	115
Nonrespondents	63	15	13	7	28
Refused	24	9	4	5	6
Cannot Locate	10	0	0	0	10
Other	29	6	9	2	12
Total Completed (Eligibles—Nonrespondents)	210	30	44	49	87
Response Rates (Completes/Eligibles)	76.9%	66.7%	74.0%	86.5%	77.8%

Table of Contents

EXHIBIT F.10

FINAL DISPOSITION OF SAMPLES OF RETAILERS IN THE POST-IMPLEMENTATION SAMPLE

	All Stores	Store Type			
		Super-markets	Grocery Stores	Convenience Stores	Other Stores
Total Sample	240	38	48	54	100
Total Ineligible	36	3	7	5	21
Out of Business	12	3	2	0	7
No EBT Use	24	0	5	5	14
Total Eligible (Total Sample—Ineligibles)	204	35	41	49	79
Nonrespondents	34	4	7	10	13
Refused	12	2	1	4	5
Language Barrier	2	0	2	0	0
Located, No Contact	6	2	2	1	1
Cannot Locate	10	0	1	3	6
Other	4	0	1	2	1
Total Completed (Eligibles—Nonrespondents)	170	31	34	39	66
Response Rates (Completes/Eligibles)	83.3%	88.6%	79.1%	79.6%	83.5%

EXHIBIT F.11

FINAL DISPOSITION OF THE SAMPLE OF RETAILERS USED IN THE ANALYSIS OF THE IMPACT OF EBT ON RETAILER COSTS

	All Stores	Store Type			
		Super-markets	Grocery Stores	Convenience Stores	Other Stores
Total Sample	210	30	44	49	87
Total Ineligible	29	2	6	5	16
Out of Business	11	2	2	0	7
No EBT Use	18	0	4	5	9
Total Eligible (Total Sample—Ineligibles)	181	28	38	44	71
Nonrespondents	31	4	7	10	10
Refused	11	2	1	4	4
Language Barrier	2	0	2	0	0
Located, No Contact	6	2	2	1	1
Cannot Locate	9	0	1	3	5
Other	3	0	1	2	0
Total Completed (Eligibles—Nonrespondents)	150	24	31	34	61
Response Rates (Completes/Eligibles)	82.9%	85.7%	81.6%	77.3%	85.9%

The response rates—the number of completed surveys as a fraction of the number of eligible retailers—were consistently high overall and within each store type. These rates were 76.9 percent for the full pre-implementation sample, 83.3 percent in the full post-implementation sample, and 82.9 percent in the subsample of retailers in both pre- and post-implementation samples.

Imputation of Store Types

We used the store classifications in the monthly FNS retailer data files to determine the "type" of each store in the population of Maryland retailers eligible for our pre-implementation survey. We used these monthly data to draw our pre-implementation sample of retailers, and also as the source of each store's monthly food stamp redemption levels. Our research samples of stores include subsamples of each of four broad store types—supermarkets, grocery stores, convenience stores, and other stores—because the impact of EBT may differ by store type. A complication arose when we used a similar, later monthly data file to obtain food stamp redemption levels for the month appropriate for the post-implementation survey. We noticed that the classification of some of the stores in our sample had changed. Consequently, we had to choose the types of these stores.

Of the 150 retailers present in both pre- and post-implementation surveys, a total of 34 exhibited changes in FNS-designated store type. Of these 34, eight switched from "other store" to "grocery store," seven switched from "grocery store" to "other store," six switched from "convenience store" to "other store," four switched from "grocery store" to "convenience store," and four switched from "convenience store" to "grocery store." These changes are probably attributable to FNS' mandatory store reauthorization project, which required in FY92 and FY93 that all authorized food retailers provide current information to FNS field offices. Much of the reauthorization effort in the Towson Field Office (the office responsible for managing FNS-authorized stores in Maryland) was completed between the pre- and post-implementation survey waves.

To categorize these 34 stores, we generally used the more recent classification. That is, about two-thirds of these imputations used the store type in the latest FNS file. However, for chain stores, we used the store type assigned to the majority of similar stores in the state.

In some cases, we classified stores based on their names—for example, "John Doe's Convenience Store" sounded like a convenience store.

To ensure that our decision to change store classifications did not materially affect the results of the study, the analyses presented in Chapter Four were repeated using all stores' original classification codes. The EBT impact on stores' operating costs remained statistically insignificant, both by store type and for all stores combined.

Imputation of Wages

In using reported hourly wages as the price of employees' time spent processing food stamps, and in imputing wages for the frequent occurrences in which wage data are missing, we had to consider the labor costs our data should and should not reflect. Large and persistent store-by-store differences in average wages are a component of variation in costs that should be considered when performing hypothesis tests on changes in costs over time. Wages should also reflect any systematic differences in labor costs across different types of stores: for example, clerks at unionized supermarkets may be paid more on average than clerks at convenience stores. Our estimates of cost changes should also reflect any shifting in the types of employees responsible for food stamp-related tasks: for example, if handling food stamps takes the same amount of time under both systems, but managers perform more tasks under EBT, we should see an increase in costs. On the other hand, we should not consider changes in labor costs arising solely from wage inflation alone, because EBT is not likely to have caused a general change in wage levels.

These principles guided our procedures for imputing missing wage data. We preferred using wage observations recorded for similar employees in the same store, so we could retain any store-specific variation in wages. Our second preference was for imputed wage observations from similar types of employees in similar types of stores. We considered but rejected any general adjustments in post-implementation wage observation to correct for inflation: we studied changes in reported hourly wages for clerks in the sample of retailers in both pre- and post-implementation surveys, and found that average differences were negligible. This finding is consistent with generally low inflation rates for the entire economy.

We first tried to impute wage observations reported by the same retailer, using averages of non-missing observations found in both pre- and post-implementation surveys. Our initial

Table of Contents

preference was for wage observations with the same full-time/part-time status and the same narrowly-defined employee type—owners, managers, head cashiers, clerks and cashiers, and accountants. In other words, if we were missing a wage observation for a part-time clerk, we first tried to use an average of wages reported for other part-time clerks in the same store. If these data were unavailable, we then tried to obtain an average of wage observations with the same full-time/part-time status and a more broadly-defined employee type—owners, managers/ accountants/head cashiers, or clerks/cashiers. If still missing, we tried to obtain an average of wage observations with the same narrowly-defined employee type, regardless of full-time/part-time status; and if still missing, we then tried to obtain an average of wage observations with the same broadly-defined employee type, regardless of full-time/part-time status.

We next relied on wage data within each of five store types—unionized supermarkets, nonunionized supermarkets, grocery stores, convenience stores, and other stores. We first tried to obtain an average of wage observations within these five store groupings, for the same broadly-defined employee category and the same full-time/part-time status. If still missing, we then tried to obtain an average of wage observations within the same store type, for the same broadly-defined employee category, regardless of full-time/part-time status. Following this final step, no more missing wage data existed. To summarize, all imputed wages recognized differences at least across these five categories of store types.

Imputation of Fringe Benefits

The price of labor time to retailers includes a share of the cost of fringe benefits in addition to the hourly wage of employees. We asked respondents to provide the fraction of total labor costs arising from fringe benefits, so we could multiply reported hourly wages by these percentages to obtain total hourly labor costs. About half the respondents did not know these percentages, so we had to impute them. We used as imputed values the median of reported percentages within each of five categories of stores—unionized supermarkets (26.9 percent), nonunionized supermarkets (13.7), grocery stores (4.1), convenience stores (8.7), and other stores (2.9). These imputed values seem reasonable: we would expect workers in larger establishments, such as supermarkets, to receive more fringes; we would expect unionized workers to receive even more fringes, and we would expect that many jobs in the other stores and convenience store to provide few if any fringes.

Imputation of Monthly Levels of Food Stamp and Cash Assistance Redemption Levels

Throughout this report, we report retailer costs standardized in terms of $1,000 of food stamp and cash assistance redemptions. We had to impute a small number of these redemption levels.

Our FNS data files, the preferred source for monthly food stamp redemption levels, reported levels of zero for 14 of the 210 retailers in our full pre-implementation sample. We assumed these zeroes should be positive values because the survey respondents reported food stamp processing costs, so we had to impute these redemption levels. A total of eight of these 14 stores were also in the post-implementation sample, so we used FNS-reported three-month averages of monthly food stamp redemption levels from the time of the post-implementation survey.[6] For the remaining six stores that were in the pre-implementation survey only, we chose to impute standardized costs, standardized times, and changes in these quantities rather than redemption levels. We used as imputed values median standardized costs and times for the appropriate store type and urban status.

Our FNS data also reported EBT-based monthly food stamp redemption levels of zero for seven of the 170 retailers in our full post-implementation sample. Because the surveys acknowledged use of food stamps, we imputed these redemption levels as well. We used as imputed values the redemption levels reported in our post-implementation survey.

We also imputed some values of monthly cash assistance check redemption levels. For the 50 stores that processed these checks in our pre-implementation survey, we obtained most of these levels by multiplying survey-reported numbers of cash assistance checks per month by $234.20, the average value of cash assistance checks. The remaining retailers who did not process checks had cash assistance redemption levels of zero. For 16 stores with missing cash assistance redemption levels, we used monthly cash assistance redemption levels reported in the post-implementation survey. For the remaining two stores that were in the pre-implementation survey only, we assumed cash assistance costs and redemption levels of zero, in effect using the median survey-reported cash assistance redemption levels. For the three stores with missing

6. We used post- (pre-) implementation data to impute pre- (post-) implementation data because pre-post changes in redemption levels were, on average, negligible.

Table of Contents

cash assistance redemption levels in the post-implementation survey, we also imputed monthly cash assistance redemption levels of zero.

Sample Weights

In estimating all results in this chapter, we used sample weights to obtain results representative of the population of retailers surveyed. We used three sets of weights—one for the full pre-implementation survey, one for the full post-implementation survey, and one for the smaller sample of retailers with both pre- and post-implementation observations are available. The formulas for these weights reflect our two-stage cluster sampling method. In our first stage, we selected a sample of zipcode clusters in Maryland; in our second stage, we selected stores of each type within these clusters.

Weights for the Full Pre-Implementation Sample. The formula for the weights for the pre-implementation sample includes three intermediate weights. The first weight is a cluster weight, unique for each of the 26 clusters from which we drew our sample. Because we were more likely to draw from larger clusters, we had to "downweight" observations from larger clusters to obtain results representative of the original population. Our measure of a cluster's size (MOS) was the sum of all monthly redemptions in the cluster. The formula for the cluster weight (CWT) for cluster i is therefore:

$$CWT_i = (\sum_i MOS_i / n) / MOS_i$$

where n is the number of clusters.

The second weight is a within-cluster weight, which is larger for stores of undersampled store types. If, for example, there are four convenience stores in a cluster, and two are in our sample, the within-cluster weight is 4/2, or 2. There are 4 × 26 unique within-cluster weights (the variable WCWT below) for the pre-implementation sample.

The third weight adjusts for the presence of retailers we tried to include in our sample, but which were found to be ineligible for our survey. These stores either never handled food stamps or went out of business. Each of the four store types has a unique eligibility weight, equal to the number of eligible stores in the survey sample divided by the total number of stores

in the survey sample.[7] We estimated M, the number of eligible stores in the population of each store type, as the product of the total population of retailers (the variable N, reported by FNS data) and the eligibility rate, ER:

$$M_j = N_j \times ER_j$$

where js are the four store types.

We combined these three intermediate weights to obtain a final pre-implementation weight with the following formula:

$$PRE\ IMPLEMENTATION\ WT_i = M_j \times (CWT_i \times WCWT_i) / (\sum_i CWT_i \times WCWT_i)$$

There are a total of 4 × 26 unique weights, one for each cluster-store type combination.

Weights for the Full Post-Implementation Sample. The formulas for these weights are identical to those used to calculate the weights used for the full pre-implementation sample of 170 retailers. The precise figures change, however, because the sample changes. The population for the post-implementation sample includes store in the pre-implementation sample, plus new clusters in Montgomery and Cecil counties and in Baltimore. Eligibility weights used include updated information on store closings and use of food stamps.

Weights for the Sample of Retailers in Both Pre- and Post-Implementation Surveys are Available. The formulas for these weights are, again, similar to those used to calculate the weights for the full pre- and post-implementation samples, although the figures change slightly because the sample changes. The cluster and within-cluster weights are the same as those used in the pre-implementation survey, but the eligibility weight reflects updated information on store closings and use of food stamps. When cost changes are estimated, the weights from the above formulas are multiplied by an additional value—the monthly EBT redemption level of each store. Without this final weighting factor, cost changes for a store conducting $1,000 of food stamp business per month would receive the same weight as a store conducting $100,000 of food stamp business per month. Given the possibility of scale economies in processing costs (i.e., standardized costs may decline as average redemption levels increase), estimates of costs in the

7. The number of eligible stores equals the number of stores with completed interviews (a total of 210 in the pre-implementation sample) plus the number of stores that process food stamps but for which interviews were not completed.

absence of weights for redemption levels would overestimate true processing costs per $1,000 of redemptions. In addition, cost changes in large stores affect statewide average costs more than cost changes in small stores. Accordingly, we multiply weights in the "pre-post sample" by total monthly EBT redemptions, so that larger stores contribute more to the final estimate of cost changes.

Other Imputations

Because many retailers apparently could not recall the number of minutes required to perform each step of handling and reshelving tasks, we sometimes had to impute these time periods. We generally used as imputed values the median number of minutes, standardized per $1,000 of redemptions, reported for stores of the same store type.

In general, we imputed missing values using median non-missing values. Because reported rates of interest were often missing or not believable, we assumed each store received an annual interest rate of 3.5 percent, the median reported rate, in our estimates of float costs. When the size of losses from errors was missing, we used median values of $10 in the pre-implementation survey and $12 in the post-implementation survey. When retailers could not recall the number of times these losses occurred, we imputed costs of zero, because the vast majority of stores reported zero losses. When retailers could not recall the value of other fees, we imputed values of zero, the value reported by the majority of stores.

APPENDIX G

STATEWIDE ESTIMATES OF RETAILER COSTS UNDER THE COUPON AND EBT SYSTEMS

Chapter Four presented an analysis of the impact of EBT on the operating costs of a sample of retailers in Maryland. This analysis was based on a restricted longitudinal sample of retailers (those who participated in both the pre-implementation and post-implementation retailer surveys). To obtain this restricted sample, we dropped 60 retailers for which we had only pre-implementation survey information and another 20 retailers for which we had only post-implementation survey information. With this longitudinal sample of retailers, we were able to estimate pre-post changes in each store's costs, and perform hypothesis tests about the mean of these changes.

While this restricted longitudinal sample of retailers was required for the analysis of store-by-store changes in costs, it is less satisfactory for obtaining an estimate of retailer costs at a single point in time. To obtain an estimate of pre-EBT retailer operating costs that best represents the experiences of retailers across the state, it is better to examine the full pre-implementation sample of retailers—including the 60 retailers that were not in the post-implementation sample and for which cost changes were not estimated. Similarly, to obtain the most representative estimate of retailer operating costs after the implementation of EBT, we need to examine the full post-implementation sample of retailers, including the 20 retailers in Cecil and Montgomery Counties and in the Park Circle district of Baltimore that were not in the sample universe of the pre-implementation survey. This appendix presents these estimates of retailer operating costs under the coupon and EBT systems.

Estimation Procedures

The estimation procedures used in this appendix are different from those used in Chapter Four. In Chapter Four, we computed each store's ratio of operating costs to redemption levels because we wanted to examine how each store's cost per $1,000 of redemptions changed under EBT. When we simply wish to examine the average size of this ratio under either the coupon or EBT system, the calculation of each store's ratio is no longer necessary. Instead, we

estimate average standardized costs for each sample by simply dividing the weighted average of all retailers' monthly costs (AVCOST) by the weighted average of all retailers' monthly redemption levels (AVRED). That is, we calculate the variable AVCOST as:

$$AVCOST = (\sum_i WT_i \times COST_i) / (\sum_i WT_i)$$

where COST is each store's monthly operating costs associated with coupon, assistance check or EBT operations; WT is the appropriate sample weight (discussed below); and i designates stores. Similarly, we calculate the variable AVRED as:

$$AVRED = (\sum_i WT_i \times RED_i) / (\sum_i WT_i)$$

where RED is each store's appropriate monthly redemption level. The cost estimate we present in this appendix is equal to the ratio of AVCOST and AVRED.

The weights used in this calculation are those used to estimate average monthly redemption levels in Chapter Four. These weights have as components the within-cluster weights, the cluster weights, and the eligibility adjustments described in Appendix F. They do not include the adjustment for EBT redemption levels, an adjustment we used to estimate cost changes because we wanted the analysis to weight more heavily cost changes in stores with larger redemption levels. The weights used in this appendix do not need to include this adjustment for redemption levels, because the formulas above naturally accord more weight to stores with larger redemption levels.

It is important to understand that ***one should not use the estimates of costs in this appendix to estimate the impact of EBT on retailer costs***. The estimates are based on different samples. Some retailers are only in the pre-implementation survey wave, some only in the post-implementation wave. The pre-post difference in these average costs reflects some combination of the effect of EBT and the confounding effect of sample changes. Similarly, average costs in this appendix come from samples that differ from the sample analyzed in Chapter Four, so the estimates contained herein will not equal the cost estimates presented in Chapter Four.

All other analysis methods, however, are identical to those employed in Chapter Four. We selected the same redemption levels for standardizing each cost category. We also used the same procedures for imputing missing data.

Table of Contents

Retailers' Processing Costs Associated with Coupon-based Issuance

In the full pre-implementation sample of 210 Maryland retailers, the total standardized cost of participating in the coupon system averages $12.49 per $1,000 of redemptions. As seen in Exhibit G.1, by far the largest share of this cost—$6.95—comes from the cost of handling and reconciling food stamp redemptions. The next largest cost category is checkout costs, which total $2.90 per $1,000 of redemptions. Two other standardized cost categories exceed $1 per $1,000 of redemptions—training costs ($1.23) and reshelving costs ($1.14). The other cost categories—float, accounting errors, and other fees—are much smaller, and together total $0.28 per $1,000 of redemptions.

EXHIBIT G.1

TOTAL COSTS UNDER THE PAPER SYSTEM
(dollars per $1,000 of benefits redeemed)

		Store Type			
	All Stores	Super-markets	Grocery Stores	Convenience Stores	Other Stores
Checkout	$2.90	$3.38	$0.67	$3.64	$3.64
Handling	6.95	7.67	5.22	25.46	5.06
Training	1.23	0.87	1.56	7.38	0.53
Reshelving	1.14	1.84	0.25	1.75	0.35
Float	0.18	0.15	0.18	0.29	0.31
Accounting errors	0.07	0.09	0.00	0.14	0.17
Space	0.00	0.00	0.00	0.00	0.00
Other fees	0.03	0.02	0.00	0.24	0.10
TOTAL	$12.49	$14.03	$7.89	$38.92	$10.16
Sample size	210	30	37	45	98

Source: Full pre-implementation retailer survey.

The estimates of average costs differ across the four subsamples classified by store type. Grocery stores have the smallest total standardized costs—$7.89. Supermarkets have larger costs ($14.03), mainly because checkout costs and handling costs are larger. In Chapter Four, we found that supermarkets generally have larger handling costs than grocery stores, in part because

the wages of supermarket employees are higher. Convenience stores incurred the largest average standardized costs—$38.92. Despite these differences in average total costs, the relative sizes of the cost categories are often similar across store type subsamples: handling and reconciling costs are consistently the largest cost category; checkout, training, and reshelving costs are somewhat smaller; and the other cost categories are the smallest.

The absence of scale economies may explain the relatively large size of standardized costs among convenience stores, for whom redemption levels are relatively small. This idea is supported by the observation that the cost categories responsible for these very high total costs—handling and training—are for activities for which one would expect scale economies to exist. However, because standardized costs incurred by "other" stores ($10.16) are less than standardized costs incurred by supermarkets ($14.03), scale economies cannot explain all cost differences across the store type subsamples.

Retailers' EBT Processing Costs

In the full post-implementation sample of 170 Maryland retailers, the total standardized cost of participating in the EBT system averages $14.35 per $1,000 of redemptions, as presented in Exhibit G.2. Again, a large share of this cost—$4.45—comes from the cost of handling and reconciling food stamp and cash assistance EBT redemptions. Other major cost categories are checkout costs ($4.53), reshelving costs ($3.29), training costs ($1.03), and space costs ($0.66). The other cost categories—float, accounting errors, and other fees—together total only $0.41 per $1,000 of redemptions.

These estimates of average costs continue to differ across the four store type subsamples. As under the coupon-based systems, grocery stores still have the smallest total standardized costs ($8.67). Supermarkets have larger costs ($15.51), mainly because checkout, handling, and training costs are larger. The average standardized costs of other stores were even higher ($28.55). Convenience stores again incurred the largest average standardized costs ($39.56). The relative sizes of these cost categories remain similar across store type subsamples: handling, checkout, training, and reshelving costs are relatively large; while the float, accounting error, and fee costs are relatively small.

Table of Contents

EXHIBIT G.2

TOTAL COSTS UNDER THE EBT SYSTEM,
(dollars per $1,000 of benefits redeemed)

		Store Type			
	All Stores	Super-markets	Grocery Stores	Convenience Stores	Other Stores
Checkout	$4.53	$4.54	$2.82	$8.02	$8.02
Handling	4.45	4.82	2.19	18.81	12.13
Training	1.03	2.33	0.40	3.03	0.48
Reshelving	3.29	2.91	2.50	8.05	1.69
Float	0.08	0.07	0.09	0.14	0.08
Accounting errors	0.11	0.21	0.00	0.00	0.00
Space	0.66	0.58	0.46	1.42	3.51
Other fees	0.22	0.05	0.22	0.10	2.63
TOTAL	$14.35	$15.51	$8.67	$39.56	$28.55
Sample size	170	31	34	39	66

Source: Full post-implementation retailer survey.

APPENDIX H

THE IMPACT OF EBT ON ATM CUSTOMERS

Under the EBT system in Maryland, cash assistance recipients may access their benefits through any automatic teller machines (ATM) connected to the MOST ATM network. While this provides easy access for many cash assistance recipients, there is some concern that access to ATM machines may be impeded for both cash assistance recipients and other ATM customers during peak usage periods, which occur during the first week of each month, when cash benefits are issued.

To address this concern, data on the amount of time customers waited to use an ATM and the amount of time each customer spent completing his or her transaction were recorded by trained observers at 20 ATM locations throughout the state. These 20 ATMs were chosen using a stratified random sampling design. First, each ATM in the state was categorized based on the monthly number of EBT transactions that occurred on the machine. Using this information, the ATMs were divided into four strata:

- 50 or fewer EBT transactions (removed from sampling frame);
- 51-199 EBT transactions ("low" volume);
- 200-499 EBT transactions ("medium" volume); and
- 500 or more EBT transactions ("high" volume).

Data collection at the machines with 50 or fewer transactions would have been extremely inefficient, since only a few EBT transactions occur at them each day. Therefore, they were

Each of these 20 ATMs was visited twice—once during the first week of the month (when cash assistance benefits are issued), and once exactly 21 days later[1] (when most EBT recipients have withdrawn all of their benefits, and are unlikely to use an ATM), resulting in 40 days of observation. Two observers conducted twelve 30-minute observation segments at each ATM each day.

The first observer noted the number of customers in line at the beginning of each 30-minute observation segment, the time that each customer entered the line to use the ATM, and the time that each customer inserted his or her card into the ATM. The second observer noted the time the customer inserted his or her card, the type of transaction(s) conducted (withdrawal, deposit, and/or an "other" type of transaction, such as a balance check), and the time that the customer removed his or her card from the ATM.[2]

Two measures are calculated using these observations: the ***wait time*** is calculated for each customer by subtracting the card insertion time from the line time (both recorded by the first observer), and the ***transaction time*** is calculated by subtracting the card removal time from the card insertion time (both recorded by the second observer). To determine if ATM access was impeded by the increase in EBT customers, as measured by longer wait times and transaction times during the peak issuance period compared to the non-peak period, the average wait and transaction times were computed and compared across time of month (first week versus third week) and stratum (low, medium, and high volume).

Observers recorded very long lines at some locations—as many as 30 people could be waiting at the beginning of an observation period on peak observation days. When the lines were particularly long, some people left the line after waiting, giving up their place in the queue. In a few instances the line was so long that the first observer recorded only a few completed observations, or was unable to record any card insertion times for customers who entered the line during the 30-minute observation segment (indicating that the wait time exceeded 30

1. By observing the same machine exactly 21 days apart, we were able to ignore possible day-of-week effects between the two observation periods.

2. The observers did not attempt to distinguish between EBT and other ATM transactions, because making that distinction would have required the observers to closely watch each transaction, which might have made the customers nervous.

Table of Contents

minutes). These truncated transactions create a severe bias in the wait time data, as we do not have a complete set of recorded wait times for the busiest ATM locations.

To address this problem, we imputed the wait times for the truncated observations. First, we counted the number of truncated observations in each segment where a customer entered the line, but did not reach the ATM prior to the end of the 30-minute observation segment. An average wait time was computed for observation segments in which at least one customer reached the ATM machine. Truncated observations in those segments were assigned the average wait time. For truncated observations where no customers reached the ATM within the 30-minutes observation period, a 30-minute wait time was assigned. This estimate is conservative—we know that these customers waited at least 30 minutes, but the wait was probably longer in at least some instances. All of the wait time analyses presented below include these imputed observations.

Exhibit H.1 presents the average ATM wait time and transaction time, by time of month (peak or nonpeak) and transaction volume. The average wait time was significantly higher in the peak period than during the third week of the month, indicating that the presence of EBT increases the amount of time ATM customers waited for the machine early in the month. The average wait time during the peak period was much higher than later in the month—319.33 seconds, compared with 58.28 seconds. This increase is due to a 2.5 minute increase in average wait time at medium-volume locations and an increase of over 5 minutes among high-volume locations.

In addition to average wait times, we examined the distribution of ATM wait times, by time of month and transaction volume (see Exhibit H.2). At low-volume ATMs there was very little change in the distribution of wait times. At ATMs in medium-volume locations in the nonpeak period, most customers experienced no wait (63 percent), and there was never a wait of five minutes or more. In the peak period, by contrast, only 35 percent of customers experienced no wait. Thirteen percent experienced a wait of five minutes or more, and 6 percent experienced a wait of 20 minutes or longer.

There are similar but stronger findings at high-volume ATMs. In nonpeak periods, 38 percent of customers had no wait for an ATM in high-volume locations, compared to 12 percent in the peak period. While there was a wait of five minutes or more for only 7 percent of customers in the nonpeak period, that figure increased to 37 percent in the peak period. In the

EXHIBIT H.1

MEAN WAIT TIME AND TRANSACTION TIME OF ATM TRANSACTIONS BY TIME OF MONTH AND TRANSACTION VOLUME
(in seconds)

	Mean Wait Time		Mean Transaction Time	
	Time	N	Time	N
First Week of the Month (cash assistance issuance period)	319.33	2,685	76.42	2,153
Low volume	21.26	165	91.13	168
Medium volume	161.90	682	70.57	591
High volume	404.50	1,838	77.13	1,394
Third Week of the Month	58.28	1,650	59.68	1,646
Low volume	32.87	164	61.69	156
Medium volume	12.82	392	64.64	388
High volume	78.38	1,094	57.64	1,102
First Week - Third Week	261.05**		16.74**	
Low volume	(11.61)**		29.44**	
Medium volume	149.08**		5.93*	
High volume	326.12**		19.49**	

Notes: [a] Transaction volume is measured using the number of EBT transactions in a given month at each ATM location. Locations with 50 or fewer transactions were excluded. Those with 51-199 transactions are categorized as low-volume; those with 200-499 as medium-volume; and those with 500 or more as high-volume.

** Statistically significant at the 1 percent level.
* Statistically significant at the 5 percent level.
† Statistically significant at the 10 percent level.

Source: ATM observation records.

peak period, 10 percent of the customers had a wait of 20 minutes or more, while no customers waited that long for an ATM in the nonpeak period.

Unlike wait times, there was very little change in average transaction times between the peak issuance period and later in the month: the average transaction time during the nonpeak period was about one minute, compared to just over one minute during the peak period (see Exhibit H.1). Although this slight increase of 5 to 30 seconds (17 seconds across all locations) is statistically significant, we are unable to reach any conclusions about the impact of EBT on transaction time. Due to the confidential nature of ATM transactions, our observers were not

EXHIBIT H.2

DISTRIBUTION OF ATM TRANSACTION WAIT TIME BY TIME OF MONTH AND TRANSACTION VOLUME

Period	No Wait	1-4 Minutes	5-9 Minutes	10-19 Minutes	20+ Minutes
First Week of the Month					
Low volume	67%	33%	0%	0%	0%
Medium volume	35	52	3	4	6
High volume	12	51	15	12	10
Third Week of the Month					
Low volume	70%	27%	3%	0%	0%
Medium volume	63	37	0	0	0
High volume	38	55	6	1	0

instructed to examine the type of card used to perform the transaction. Therefore, we are unable to say what percentage of the customers observed used an EBT card, or to derive card-specific average transaction times. However, given that the largest increase in average transaction time occurred at ATMs with low volumes of EBT transactions, it seems unlikely that the peak/nonpeak differences are due to EBT.